AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF PAGES
N/A	1	184

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0003	03 APR 21	N/A	SPEC. NO. 1143

6. ISSUED BY	CODE	7. ADMINISTERED BY *(If other than Item 6)*	CODE
DEPARTMENT OF THE ARMY CORPS OF ENGINEERS SACRAMENTO 1325 J STREET SACRAMENTO, CALIFORNIA		SEE ITEM 7	

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*	(√)	9A. AMENDMENT OF SOLICITATION NO.
	X	DACW05-03-B-0004
		9B. DATED *(SEE ITEM 11)* 2 APR 2003
		10A. MODIFICATION OF CONTRACTS/ORDER NO. N/A
		10B. DATED *(SEE ITEM 13)* N/A
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(√)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

NAPA RIVER/NAPA CREEK FLOOD PROTECTION
NAPA, CALIFORNIA

1 ENCL ***NOTE: THE ONLY REVISIONS TO THESE SECTIONS WAS THE RENUMBERING OF THE PARAGRAPHS.***

1) REVISIONS: SECTIONS 01312A, 01330, 01356, 01500, 01505, 02215, 02230, 02290, 02301, 02722, 02748A, 02920L, 03150, 03307 & 05101.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY *(Signature of Contracting Officer)*	16C. DATE SIGNED

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SECTION 01312A

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SECTION 01312A

QUALITY CONTROL SYSTEM (QCS)

1.1 GENERAL

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

Administration
Finances
Quality Control
Submittal Monitoring
Scheduling
Import/Export of Data

1.1.1 Correspondence and Electronic Communications

For ease and speed of communications, both Government and Contractor will, to the maximum extent feasible, exchange correspondence and other documents in electronic format. Correspondence, pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.1.2 Other Factors

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01320A, PROJECT SCHEDULE, Section 01330, SUBMITTAL PROCEDURES, and Section 01451A, CONTRACTOR QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through QCS. Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

1.2 QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the

Government's RMS Internet Website. Upon specific justification and request by the Contractor, the Government can provide QCS on 3-1/2 inch high-density diskettes or CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become available.

1.3 SYSTEM REQUIREMENTS

The following listed hardware and software is the minimum system configuration that the Contractor shall have to run QCS:

Hardware

IBM-compatible PC with 200 MHz Pentium or higher processor

32+ MB RAM

4 GB hard drive disk space for sole use by the QCS system

3 1/2 inch high-density floppy drive

Compact disk (CD) Reader

Color monitor

Laser printer compatible with HP LaserJet III or better, with minimum 4 MB installed memory.

Connection to the Internet, minimum 28 BPS

Software

MS Windows 95 or newer version operating system (MS Windows NT 4.0 or newer is recommended)

Word Processing software compatible with MS Word 97 or newer

Internet browser

The Contractor's computer system shall be protected by virus protection software that is regularly upgraded with all issued manufacturer's updates throughout the life of the contract.

Electronic mail (E-mail) compatible with MS Outlook

1.4 RELATED INFORMATION

1.4.1 QCS User Guide

After contract award, the Contractor shall download instructions for the installation and use of QCS from the Government RMS Internet Website; the Contractor can obtain the current address from the Government. In case of justifiable difficulties, the Government will provide the Contractor with a

CD-ROM containing these instructions.

1.4.2 Contractor Quality Control(CQC) Training

The use of QCS will be discussed with the Contractor's QC System Manager during the mandatory CQC Training class.

1.5 CONTRACT DATABASE

Prior to the pre-construction conference, the Government shall provide the Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed, generally by files attached to E-mail. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

1.6 DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. The Contractor shall establish and maintain the QCS database at the Contractor's site office. Data updates to the Government shall be submitted by E-mail with file attachments, e.g., daily reports, schedule updates, payment requests. If permitted by the Contracting Officer, a data diskette or CD-ROM may be used instead of E-mail (see Paragraph DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM). The QCS database typically shall include current data on the following items:

1.6.1 Administration

1.6.1.1 Contractor Information

The database shall contain the Contractor's name, address, telephone numbers, management staff, and other required items. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver Contractor administrative data in electronic format via E-mail.

1.6.1.2 Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Each subcontractor/trade shall be assigned a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver subcontractor administrative data in electronic format via E-mail.

1.6.1.3 Correspondence

All Contractor correspondence to the Government shall be identified with a serial number. Correspondence initiated by the Contractor's site office shall be prefixed with "S". Letters initiated by the Contractor's home

(main) office shall be prefixed with "H". Letters shall be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

1.6.1.4 Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.6.1.5 Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

1.6.2 Finances

1.6.2.1 Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the construction schedule. The sum of all pay activities shall be equal to the total contract amount, including modifications. Pay activities shall be grouped by Contract Line Item Number (CLIN), and the sum of the activities shall equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

1.6.2.2 Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet and include it with the payment request. The work completed under the contract, measured as percent or as specific quantities, shall be updated at least monthly. After the update, the Contractor shall generate a payment request report using QCS. The Contractor shall submit the payment requests with supporting data by E-mail with file attachment(s). If permitted by the Contracting Officer, a data diskette may be used instead of E-mail. A signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

1.6.3 Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other contractor QC requirements. The Contractor shall maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report. The Contractor shall provide the Government a Contractor Quality Control (CQC) Plan within the time required in Section 01451A, CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, the Contractor shall submit a data diskette or CD-ROM reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal

register, QC requirements, and equipment list.

1.6.3.1 Daily Contractor Quality Control (CQC) Reports.

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS shall be the Contractor's official report. Data from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by Section 01451A, CONTRACTOR QUALITY CONTROL. Reports shall be submitted electronically to the Government using E-mail or diskette within 24 hours after the date covered by the report. Use of either mode of submittal shall be coordinated with the Government representative. The Contractor shall also provide the Government a signed, printed copy of the daily CQC report.

1.6.3.2 Deficiency Tracking.

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. The Contractor shall maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of both QC and QA punch list items.

1.6.3.3 Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

1.6.3.4 Accident/Safety Tracking.

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of the safety comments. In addition, the Contractor shall utilize QCS to advise the Government of any accidents occurring on the jobsite. This brief supplemental entry is not to be considered as a substitute for completion of mandatory reports, e.g., ENG Form 3394 and OSHA Form 200.

1.6.3.5 Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.6.3.6 QC Requirements

The Contractor shall develop and maintain a complete list of QC testing,

transferred and installed property, and user training requirements in QCS. The Contractor shall update all data on these QC requirements as work progresses, and shall promptly provide this information to the Government via QCS.

1.6.4 Submittal Management

The Government will provide the initial submittal register, ENG Form 4288, SUBMITTAL REGISTER, in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update, ENG Form 4288, shall be produced using QCS. RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.6.5 Schedule

The Contractor shall develop a construction schedule consisting of pay activities, in accordance with Contract Clause "Schedules for Construction Contracts", or Section 01320A, PROJECT SCHEDULE, as applicable. This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF) (see Section 01320A PROJECT SCHEDULE). The updated schedule data shall be included with each pay request submitted by the Contractor.

1.6.6 Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data, and schedule data using SDEF.

1.7 IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. The Contractor shall ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

1.8 DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

The Government-preferred method for Contractor's submission of updates, payment requests, correspondence and other data is by E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of computer diskettes or CD-ROM for data transfer. Data on the disks or CDs shall be exported using the QCS built-in export function. If used, diskettes and CD-ROMs will be submitted in accordance with the following:

1.8.1 File Medium

The Contractor shall submit required data on 3-1/2 inch double-sided high-density diskettes formatted to hold 1.44 MB of data, capable of running under Microsoft Windows 95 or newer. Alternatively, CD-ROMs may be used. They shall conform to industry standards used in the United States. All data shall be provided in English.

1.8.2 Disk or CD-ROM Labels

The Contractor shall affix a permanent exterior label to each diskette and CD-ROM submitted. The label shall indicate in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

1.8.3 File Names

The Government will provide the file names to be used by the Contractor with the QCS software.

1.9 MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, the Contractor shall meet with the Government representative to review the planned progress payment data submission for errors and omissions. The Contractor shall make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification.

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SECTION 01330

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SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL IDENTIFICATION (SD)
Submittals required are identified by SD numbers and titles as follows:

SD-01 Preconstruction Submittals

SD-02 Shop Drawings

SD-03 Product Data

SD-04 Samples

SD-05 Design Data

SD-06 Test Reports

SD-07 Certificates

SD-08 Manufacturer's Instructions

SD-09 Manufacturer's Field Reports

SD-10 Operation and Maintenance Data

SD-11 Closeout Submittals

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.2.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.3 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.5 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

1.6 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.7 SUBMITTAL REGISTER

At the end of this section is a submittal register showing items of

equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The Contractor shall maintain a submittal register for the project in accordance with Section 01312A QUALITY CONTROL SYSTEM (QCS).

1.8 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 35 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

1.9 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.10 SUBMITTAL PROCEDURES

Submittals shall be made as follows:

1.10.1 Procedures

Submittals required by the CONTRACT CLAUSES and other non-technical parts of the contract are not included in this section. The Contractor shall submit to the Contracting Officer: six (6) copies for approval, and four (4) copies for information only, of all shop drawings, certificates of compliance, materials, fixtures and equipment lists called for under the various headings of these specifications. These drawings, certificates and lists shall be complete and detailed and, prior to submission, must be reviewed and certified correct by the Contractor as required by the Quality Control System paragraph of the Construction Quality Control Section. If approved by the Contracting Officer, four (4) sets of all submittals will be retained by the Contracting Officer and two (2) sets will be returned to the Contractor. Submittals for information only usually will not be returned. The Contractor is encouraged to submit paper documents that are printed/copied double-sided on recycled paper that has at least 20% postconsumer material.

1.10.1.1 Resubmittals

If a submittal is returned for correction or is not satisfactory and is disapproved by the Contracting Officer, the Contractor shall resubmit the corrected material in the same quantity, including reproducibles as

specified for the original submittal for approval within 14 days after receipt by him of the disapproved material.

1.10.2 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.11 AS-BUILTS

(Specific instructions may be obtained from Internet Address: http://www.cbbs.spk.usace.army.mil/html/aeguide.html)

These instructions include submittal requirements for shop drawings. All other submittals and O&M Manuals will be reviewed and submitted as per other Technical Specification Section requirements.

(A) Working As-Built Drawings(Government Approved - See ATTACHMENT - CONTRACTOR PREPARED AS-BUILTS). The Contractor shall maintain a current record of the work as actually constructed in the form of working as-built drawings. These will typically be red-line mark-ups of the construction plans. The quantity of sets to be red-lined can be found under the paragraph below, Submittal Requirements for Review and Approval. It is the Contractor's responsibility to ensure the use of the most current drawings. Subject to the approval of the Contracting Officer, a member of the Contractor's Quality Control Organization will be assigned the sole responsibility for the maintenance and currency of the as-built drawings. Any reassignment of duties concerning the maintenance of the as-built drawings will be promptly reported to the Contracting Officer. Guidelines and drafting standards for preparing working and final as-built drawings can be found on the Internet.

(B) Final As-Built Drawings(Government Approved - See ATTACHMENT - CONTRACTOR PREPARED AS-BUILTS). The Contractor shall prepare final, record copy drawings which depict the actual conditions upon completion of construction. The deliverable required shall be in both hard copy and electronic format. The final approved submittal shall be in electronic format only.

Submittal Requirements for Review and Approval.

a. Working as-built drawings.(Government Approved - See ATTACHMENT - CONTRACTOR PREPARED AS-BUILTS) Three sets of red-line markups shall be submitted after the completion of work at 25% intervals (i.e. 25%, 50%, 75%, and 100%),for bid items, if appropriate, or with more frequent intervals as determined by the Contracting Officer, in conjunction with approval of progress payments.

b. Final as-built drawings.(Government Approved - See ATTACHMENT -

CONTRACTOR PREPARED AS-BUILTS)) All three sets of red-line markups and one new set (hard copy bond or blue-line) of completed final as-built drawings shall be submitted for review within 10 working days prior to the pre-final inspection. If upon review, the drawings are found to contain errors and/or omissions, they shall be returned to the Contractor for corrections.

Within 15 calendar days after the final project inspection, the Contractor shall submit for approval the one copy of updated red-line mark-up CADD files depicting final as-built conditions. If upon review by the Sacramento District, the drawings are found to contain errors and/or omissions, they shall be returned to the Contractor for corrections.

Within 45 calendar days after the final inspection, the Contractor shall transfer the final as-built drawings to the Government according to Paragraph, End-User (Customer Requirements).

(C) End-User (Customer Requirements)

1. CADD Format.

Microstation J for use on Windows 98 (or later) Operating System. A copy converted to Autocadd 2000 shall also be provided.

2. Hard Copy Media and Quantities.

Two (2) full-size 22" x 34" reproducible sets on vellum.

(D) Delivering electronic files.

Specific instructions for labeling disks or CD-ROMs, directory structure, indexing and additional documentation requirements are listed on the Internet.

(Internet Address: http://www.cbbs.spk.usace.army.mil/html/aeguide.html)

1.12 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.13 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. 4 copies of the submittal will be retained by the Contracting Officer and 2 copies of the submittal will be returned to the Contractor.

1.14 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals.

The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

1.15 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR

(Firm Name)

_____ Approved

_____ Approved with corrections as noted on submittal data and/or attached sheets(s).

SIGNATURE: _____

TITLE: _____

DATE: _____

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SECTION 01356

STORM WATER POLLUTION PREVENTION MEASURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 4439	(1997) Standard Terminology for Geosynthetics
ASTM D 4491	(1996) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 1996)) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1995) Determining Apparent Opening Size of a Geotextile
ASTM D 4873	(1995) Identification, Storage, and Handling of Geosynthetic Rolls

SAN FRANCISCO REGIONAL WATER QUALITY CONTROL BOARD

Call 510-622-2419 to order	(1999) Erosion and Sediment Control Field Manual. 3rd Edition

1.2 GENERAL

The Contractor shall implement the storm water pollution prevention measures specified in this section using the appropriate Best Management Practices (BMPs) in order to meet the requirements of Section 01354 ENVIRONMENTAL PROTECTION, and the requirements of the National Pollution Discharge Elimination System (NPDES).
A vital component of the NPDES General Permit is the implementation of a Storm Water Pollution Prevention Plan (SWPPP) which is attached to this specification 01356. Paragraph 3.5 of this Section 01356 describes the instructions to the contractor on how to complete, certify, approve and implement the SWPPP. The Best Management Practices (BMPs) for erosion and

sedimentation control and implimentation requirements are specified in this Section. Section 01356 describes all BMPs including mandatory housekeeping BMPs, General Site management, inspection and maintenance requirements which are necessary to comply with the NPDES General Permit. All erosion control BMPs and all sedimentation controls BMPs must be installed within 14 days after completion of all earth moving activities for each specific area during the rainy season (1 Oct to Mar 31). During the non-rainy season, the 14 day requirement is waived for the installation of erosion control BMPs; but the sedimentation control BMPs must still be installed within 14 days.

1.3 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals not having an "GA" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

-Certified Storm Water Pollution Prevention Plan (SWPPP); G

See paragraph 3.5.

-Manufacturer's installation instructions of erosion controls, sedimentations controls, if any, for straw wattles, etc

1.4 IMPLEMENTATION REQUIREMENTS DURING CONSTRUCTION

The controls and measures required by the Contractor are described below. The Contractor shall implement the Best Managment Practices(BMPs) stated in this specification and in the SWPPP. The SWPPP includes color coded maps which identify the scope and location of the erosion control and sedimentation control BMPs. Other BMPs are described in the SWPPP.

1.4.1 Stabilization Practices

The stabilization practices to be implemented shall include tackified straw and drilled vegetation as stated in the EROSION CONTROL BMPs of the SWPPP. On his daily CQC Report, the Contractor shall record the dates when the major grading activities occur, (e.g., clearing grubbing, excavation, embankment, andgrading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Except as provided in paragraphs UNSUITABLE CONDITIONS, stabilization practices shall be initiated as soon as practicable, but no more than 14 days, in any portion of the site where construction activities have temporarily or permanently ceased. See paragraph 1.1 for further information on the 14 days requirement.

1.4.2 Unsuitable Conditions

Where the initiation of stabilization measures by the fourteenth day after construction activity temporarily or permanently ceases is precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable after conditions become suitable.

1.4.3 SWPPP and General Permit Requirements

All requirements of the attached SWPPP and the NPDES General Permit (www.swrcb.ca.gov/stormwtr/construction.html) shall apply during the duration of construction.

1.4.4 Cost Considerations

The contractor is responsible for all costs associated with implementing the attached SWPPP in order to maintain compliance with the Permit. This includes the installation of erosion and sedimentation BMPs, Mandatory Housekeeping BMPs, Bi-weekly Inspection requirements, Maintenance and Repair of BMPs, Water sampling during a rain event, and all other requirements specified in the SWPPP.

1.4.5 Schedule of BMP installation.

The SWPPP requires that the contractor provide a schedule to install all erosion and sedimentation control BMPs. The BMP installation schedule must be attached to the SWPPP and adherance to the BMP installation schedule is required to meet the requirements of the NPDES General permit. The schedule must comply with the 14 day requirement in paragraph 1.1 and 1.3.1.

1.4.6 Due Diligence by the Contractor

During construction the contractor is also required to perform the following Due Diligence actions to prevent stormwater pollution:

(1) MINIMIZE the length of time that disturbed soil is exposed. 14 days is the maximum but 5 days or less should be accomplished whenever possible.

(2) REDUCE the total area of exposed soil. The contractor should divide large areas into smaller sections so that work can be accomplished and BMPs are installed one section at a time.

(3) PROTECT all receiving waters and stormwater inlets previous identified in the SWPPP and any new receiving waters and stormwater inlets that are discovered or not covered in the SWPPP. This includes drainage channels, creeks, rivers, natural watercourses, water bodies, and/or ag ditches leading to any of the preceeding.

(4) MONITOR before and after each rain event, and at least daily during prolong rain events as specified in the SWPPP.

(5) MAKE every attempt to stabilize the disturbed soil at least 48 hours before an incoming major storm event. If necessary, stop all construction work in order to have the necessary erosion or sedimentation control BMP installed.

1.5 Erosion Control BMP

1.5.1 Primary Erosion Control BMP

The Erosion Control Best Mangement Practice to protect disturbed soil areas for this project shall be tackified straw and drilled vegetation for erosion protection. The vegetation must be planted as soon as possible and sedimentation control BMPs must be installed during the vegetation establishment period.

1.5.2 Installation Location

Tackified Straw and drilled vegetation shall be placed in designated disturbed soil areas located within the proposed floodplain terrace. See attached maps to the SWPPP for the location of erosion BMP.

1.6 Sedimentation Control BMP

The sedimentation control Best Mangement Practice shall be made up of fiber rolls (Fiber rolls are also called Straw Wattles). The detailed specifications of fiber rolls are provided in paragraph 2.1.1.

1.6.1 Primary Sedimentation Control

1.6.2 Installation Location

The constractor shall be responsible to provide adequate sedimentation control measures to prevent any silt resulting from ineffective erosion controls or areas without any erosion controls. The fiber rolls shall be properly installed to effecively retain sediment during or immediately after completing each phase of work. Final removal of sedimentation BMPs shall be upon approval of the government. At a minimum the the location of sedimentation BMPs shall be in accordance with the marked up site maps attached to the SWPPP. Generally the marked-up locations should be in the following areas: (1) along the downslope perimeter of all disturbed areas, (2)perpendicular to the flow in the bottom of any new drainage ditch, channel, swales. (3) at the entrance to culverts or stormwater sewer inlets, (4) along the river bank if the water flows from the disturbed area towards the river. All fiber rolls shall be installed along contours that are level in elevation to avoid concentrated water flow and possible rill and gully erosion.

If the marked-up maps are not consistant with the above guidelines, the marked-up maps should be revised accordingly and with the concurrance of the on-site government field representative. The contractor may add or delete the sedimentation control measures to suit the actual project by the

contractor must be aware that the deletion or the lack of sedimentation controls may subject theis project to potential enforcement action by the regulatory agencies as noted in paragraph 3.5.

PART 2 PRODUCTS

2.1 COMPONENTS FOR STRAW WATTLES

2.1.1 Straw Wattles Detailed Specifications

Fiber rolls are tubes of rice straw, wheat, or oat straw encases in either UV degrageable plastic netting or 100% biodegradeable burlap and are commony called straw wattles. The wattles are approximately 8 to 12 inches in diameter, 20 to 35 feet long, and wieigh between 25 to 35 lbs per roll. The plastic netting or bulap must be environmentally friendly or must degrade in such a manner that there is no adverse significant risk to small animals, aquatic life or plant life. The straw, rice, or wheat shall originate from the state of California. Any imported straw, rice, wheat, or oat from other states require certification from the manufacturer that the imported material is free of pest and disease and approval from the State of California. All shipping costs, material costs, installation costs, and maintenance costs, and all incidentals shall be provided by the contractor.

2.1.2 Inspection and Maintenance Requirements

Fiber roll installation must be visually instpected by the SWPPP coordinator and a government field representative. Restaking or reinstallation may be required if the installation is not in accordance with paragraph 3.2.1 or areas have been found to be unprotected. Subsequent inspections and maintenance shall be performed by the SWPPP coordinator in accordance with the SWPPP.

2.1.3 Storage Requirements

Storage and stockpiling of fiber rolls shall be in accordance with the supplier's or manufacturer's instructions. This should also include protection from UV sunlight, mold, or water damage, animal and insect damage, theft and vandalism.

2.1.4 Suggested Straw Wattle Suppliers

Fiber rolls (or wattles) must meet paragraph 2.1.1. Suggested suppliers are California Straw Works (www.strawwattles.com), other fiber rolls suppliers listed in www.ieca.org, or any local suppliers.

PART 3 EXECUTION

3.1 INSTALLATION OF EROSION CONTROL BMPs

3.1.1 Tackified Straw

Straw will be blown straw sprayed with a tackifier or crimped into the

ground with Heavy equipment. Crimp by trackwalking parallel to the slope so that track marks are perpendicular to the flow of water. Refer to section 02920L GRASS SEEDING for detailed intallation instructions.

3.1.2 Drilled Vegetation

Native grasses will be drilled seeded using a truax drill or agricultural drill seeder. Refer to section 02920L GRASS SEEDING for detailed procedures.

3.2 INSTALLATION OF SEDIMENTATION CONTROL BMPs

3.2.1 Straw Wattles

Installation shall be in accordance with the supplier's or manufacturer's instructions. These instructions shall be provided to the government field representative for inspection purposes. If there are no instructions, then the instructions shall be as follows: The ends of wattles shall be abutted to each other snuggly. Stakes shall be made from 2X4 lumber sawn diagonally. Lengths of stakes shall be 2.5 feet and driven in the wattles 18 to 24 inches deep at three foot centers. Additional instructions are documented on page 47 to the SF RWQCB Erosion and Sediment Control Field Manual, 3rd edition. This manual is available from the Friends of the San Francisco Esturary, for approximately $50, at (510)622-2419. This manual also covers Good Housekeeping BMPs as required by the SWPPP.

3.3 MAINTENANCE

The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. Maintenance procedures for the erosion measures can be found in section 02920 GRASS SEEDING. The following procedures shall be followed to maintain the sedimentation protective measures.

3.3.1 Straw Wattle Maintenance.

Restaking or reinstallation may be required if the installation is not in accordance with paragraph 3.2.1. The contractor must also meet requirements listed in the SWPPP and follow the manufacturers maintenance instructions.

3.4 INSPECTIONS

3.4.1 General

The Contractor shall inspect the site in accordance with the attached SWPPP. The SWPPP provides the inspection frequency and inspection reports. The general inspection standards shall be as follows: The erosion BMPs and sedimentation BMPs and storm drain inlet protection BMPs must be fully

operational and effective in preventing stormwater pollution. Any tears in fabric, dislodgement of posts or stakes, loosening attachments, or exposure of loose soil must be corrected. Any missing or damaged BMPs caused by a storm event, theft or any other reason must be replaced. The SWPPP also requires the collection of water samples during a rain event and subsequent lab analysis.

3.5 INSTRUCTIONS FOR COMPLETING, CERTIFYING, APPROVING AND IMPLEMENTING THE STORMWATER POLLUTION PREVENTION PLAN

The Stormwater Pollution Prevention Plan (SWPPP)is a requirement of the NPDES General Permit and compliance is mandatory. Noncompliance with the SWPPP or this specification 01356 may trigger enforcement action by the Regional Water Quality Control Board against the Corps of Engineers for violating the Clean Water Act. If a Notice of Violation, Cease and Desist Order, or an Administrative Civil Liability is issued and is caused by the contractor's noncompliance with the SWPPP or provision of this contract specification, the Corps of Engineers will withhold partial payment and contractor's overall performance will be rated as unsatisfactory.

3.5.1 Contractor's certification procedure

The attached SWPPP includes specific instructions in Section 2 of the SWPPP on how to complete the missing information in the SWPPP. As described by Section 2 of the SWPPP, the contractor shall review the entire SWPPP for applicability and adequacy. Deficiencies in the SWPPP should be brought to the government's attention prior to certification. If there are no deficiencies or the deficiencies have been corrected, the contractor shall complete the SWPPP, certify the SWPPP and submit the SWPPP for government approval prior to any activity that may create a potential for stormwater pollution. After government approval, the original SWPPP will be returned to the contractor for implementation. Section 4 in the SWPPP provides details of how to conduct any changes to the SWPPP during construction. A copy of the certified SWPPP must be submitted to the SF Bay Regional Water Quality Control Board (Leslie Ferguson, 510-622-2344) and to the contracting officer. The original SWPPP shall be posted and readily available when requested by a visitor.

3.5.2 Correcting Deficiencies found after Certification

The contractor shall notify the government field representative of any obvious or questionable deficiencies. An example of an obvious deficiency is a stormwater inlet drain is discovered during contract work but was not documented in the SWPPP or protected against stormwater water pollution. In this case, the contractor shall pen and ink the changes in the SWPPP and provide the necessary protection to comply with the NPDES General Permit. An example of a questionable deficiency is a change in the rainfall flow pattern due to grading which may delete the need for a silt fence or straw wattles. In this case, the contractor requires government approval to delete a BMP that is documented in the SWPPP. In general, adding a new BMP to comply with the NPDES General Permit does not require government

approval but deleting or changing an existing BMP will require government approval.

3.5.3 Termination of SWPPP responsibilities

The contractor must receive a written memorandum from the government to terminate the contractor's obligation to the SWPPP. The written memorandum is normally provided after the demolition work is completed and the vegetation is fully established and there is no risk of stormwater pollution. Assuming the demolition work and all erosion and sedimentation controls are installed around January 31, the expected termination date shall be April 30 since the contractor is still required to perform BMP's maintenance and inspection work until one month after the rainy season ends. Any subcontractor's service contract should include all original requirements of SWPPP including maintenance of all BMPs, costs for repairing or replacing damaged or missing BMPs, and the periodic inspection costs. However, using a subcontractor to perform BMP inspection, maintenance, and repair does not terminate the prime contractor's obligation to the SWPPP until the government memorandum is issued.

ATTACHMENT 4.1 - STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

-- End of Section --

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
FOR NAPA RIVER/NAPA CREEK FLOOD CONTROL PROJECT

EAST BANK – KENNEDY PARK TO IMOLA
CONTRACT 1B

Prepared for Compliance with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity

February 2002

Prepared by

US Army Corps of Engineer
Sacramento District
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STORM WATER POLLUTION PREVENTION PLAN

1. OBJECTIVES

This Storm Water Pollution Prevention Plan (SWPPP) is intended to meet the Waste Discharge Requirements (WDR) for Discharges of Storm Water Runoff associated with Construction Activity under SWRCB Order 99-08-DWQ which is the General Permit for construction projects for the National Pollutant Discharge Elimination System (NPDES) (www.swrcb.ca.gov/stormwtr/construction.html). Paragraph 4 of the General Permit requires that this SWPPP must be prepared in accordance with the format described in Section A of the General Permit and the content must address the specific circumstances for this construction site. This SWPPP is also required by Provision C.18 to the Napa River Flood Protection Project's WDR issued by the San Francisco Bay Regional Water Quality Control Board (RWQCB).

The General Permit requires the SWPPP to (a) identify all pollutant sources including sources of sediment that may affect the quality of storm water discharges; (b) identify non-storm water discharges; (c) identify and construct the Best Management Practices or BMPs during construction with an implementation time schedule and (d) a maintenance schedule designed to reduce or eliminate pollutants after the construction is completed. Certification of this SWPPP is also required.

This SWPPP covers the East Bank of the Napa River/Napa Creek Flood Protection Project from Kennedy Park (station 636.83) to Imola Avenue (station 700). This project is part B of contract 1 and is the second of a total of 4 contracts to change the flood features of this river. This SWPPP is not applicable to the three other contracts.

For the purpose of this SWPPP, the main construction contractor shall be designated as the "discharger" since the construction contractor has direct control to minimize any potential stormwater discharge during construction*. The US Army Corps of Engineers shall be designated as the "government" in this SWPPP. The discharger (i.e. the main construction contractor) shall designate a Primary SWPPP coordinator who has the direct authority and the primary responsibility to implement the requirements of this SWPPP. A Secondary SWPPP coordinator shall also be identified who will assume the SWPPP coordinator's responsibilities in the event the Primary SWPPP coordinator is not on-site. Once the contract is awarded, the names of the Primary and Secondary SWPPP coordinators shall be identified in Section 13 of this SWPPP.

*Technically, the General Permit stated that the landowner is the discharger and that the entity responsible for the construction activity is responsible for complying with the SWPPP.

2. IMPLEMENTATION SCHEDULE

A Notice of Intent (NOI) and application fee to obtain coverage under the General Permit will be submitted by the government and the Receipt of the NOI and the Waste Discharge ID (WDID) number should be available prior to the start of construction. The General Permit requires that a SWPPP be developed by the discharger.

The contract specification (paragraph 3.5.1 of section 01356) requires that this Preliminary SWPPP be reviewed by the discharger (contractor) for applicability and the discharger (contractor) must certify the SWPPP. The discharger is also required to check the applicable boxes or complete the applicable blanks to identify the potential pollutant source. Other missing information includes the associated BMPs, erosion control measures, sediment control measures, and the names of the primary and secondary SWPPP coordinators. After completing the missing information, the discharger is then required to certify this SWPPP in Section 16 prior to the start of any soil disturbing activity. Prior to certification, the discharger must provide a separate detailed time schedule to implement each BMP. The detailed time schedule shall be generated by the discharger and attached at the end of this SWPPP.

During construction, the discharger is responsible for recognizing any changes in the project, which may affect this SWPPP or increases the risk of Storm Water Pollution (such as a lack of a BMP to address a potential Storm Water Pollution risk that develops during actual construction). The discharger is required to implement a new BMP and amend this SWPPP in accordance with Section 4 of this SWPPP in order to eliminate or minimize the risk. The discharger is also required to complete the attached Site Inspection/Maintenance/Repair Form during construction as described in Section 11. An annual certification of compliance with the SWPPP and the General Permit is required as described in Section 14.

After construction is completed, section 02920L of the contract specification requires the discharger to conduct maintenance, weeding, and periodic field inspections during a revegetation establishment period. The requirements of the General Permit shall apply until the end of this revegetation period. The annual fees to maintain coverage by the General Permit and submitting the Notice of Termination (NOT) are the responsibilities of the government. During this revegetation establishment period, the discharger is still responsible to maintain the requirements of the General Permit.

Prior to submitting the NOT at the end of the revegetation establishment period, the government and the discharger are required to perform a final walk-through inspection to ensure no future stormwater discharge will occur. Section 7 provides the inspection standards. The government will ensure that all inspection and recording requirements in Section 10 (post-construction stormwater management plan) have been met prior to submitting the NOT.

3. AVAILABILITY

The SWPPP shall be available at the construction site while the site is under construction during working hours, commencing with the initial construction activity and ending with the termination of coverage under the General Permit. The SWPPP shall be located at a highly visible and accessible location in the on-site office, such as a bulletin board or a wall mounted file rack. The SWPPP must be readily accessible to any worker, public visitor, or inspector from the state or regional water quality control board during working hours, commencing with the initial construction activity and ending with termination of coverage under the General Permit. If the on-site office is closed during working hours, a cellular phone number of the on-site foreman or the SWPPP coordinator must be posted on the front door.

This SWPPP should also be on file with the RWQCB and be made available to the public under Section 308(b) of the Clean Water Act.

In addition to this SWPPP and the General Permit, the discharger is required to maintain a daily field logbook and a three ring binder to file the completed inspection records described by Section 11. The daily field logbook and completed inspection records are normally maintained by the construction foreman or SWPPP coordinator and must be made available when requested.

4. REQUIRED CHANGES

REQUIRED CHANGES PRIOR TO CONSTRUCTION: As specified by the contract specification (Section 01354), the discharger shall review this Preliminary SWPPP to verify applicability and complete any blank information needed to complete the SWPPP. The following actions must be accomplished <u>but do not require specific government approval</u>: Identification of the Primary and Secondary SWPPP coordinator; identification of the SWPPP coordinator's training; checking any boxes for applicability; filling in any blanks; identifying any potential pollutant source; identifying the applicable BMPs; adding any additional erosion control measures; correcting an indisputable error; adding any new information, and/or certifying this SWPPP. However, a deletion or a deviation of any original requirement of the Preliminary SWPPP is considered a major change, and therefore requires government approval in writing. In this event, the discharger shall document the reasons for any proposed deletion in a memorandum of record and request formal government approval. Government approval of any proposed deletion will be dependent on whether the deletion will create an acceptable or unacceptable risk of causing storm water pollution during a storm event. The discharger must certify the SWPPP in Section 16 prior to any soil disturbing activities.

REQUIRED CHANGES DURING CONSTRUCTION: The discharger shall amend this SWPPP during construction whenever there is a change in construction or operations which may affect the potential discharge of pollutants to surface waters, ground waters, or a municipal separate storm sewer system (MS4). A BMP must be identified to address

the potential discharge of each pollutant. The SWPPP shall also be amended if the discharger violates any condition of the General Permit or has not achieved the general objective of reducing or eliminating pollutants in storm water discharges. If the RWQCB later determines that the discharger is in violation of the General Permit, the SWPPP shall be amended and implemented in a timely manner, but in no case more than 7 calendar days after notification by the RWQCB. All amendments should be dated and certified using the same certification language in SECTION 16 and the amendments shall be directly attached to the original SWPPP. A schedule to implement the BMPs shall be generated by the discharger and attached to this SWPPP. The discharger may change this schedule to suit the actual construction conditions and ensure there is no increased risk of a stormwater pollution discharge. Since the discharger has ultimate responsibility of complying with this SWPPP and the requirements of the General Permit, Government approval is not required on any schedule change during construction. The government will provide project oversight as an independent check to verify compliance with the SWPPP and the requirements of the General Permit.

5. SOURCE IDENTIFICATION

A. PROJECT INFORMATION

Detailed Maps construction maps showing areas of soil excavation, grading, filling, and drainage flow paths are attached (Attachment 1) at the end of this SWPPP. The construction for this project will occur at five major locations:

(1) Soil excavation and grading to form the Marshplain Terrace on the East bank of Napa River in Kennedy Park downstream from Old Tulocay Creek.

(2) Soil excavation and grading to form the Floodplain Terrace on the East bank of the Napa River in Kennedy Park downstream from Old Tulocay Creek.

(3) Soil filling and grading to create a 25 foot wide flat bench between the Marshplain and Floodplain Terraces from station 637+00 to station 680+00

(4) Soil excavated from the Terraces will be used to create a new training dike on the east side of the Floodplain Terrace. Soil filling and grading to create a new training dike on the eastern border of the Floodplain Terrace south of Old Tulocay Creek.

(5) Excavated soil disposal site: Excavated soil disposal will be at an established dredged sediment disposal area located at the southern section of Kennedy Park. Excavated soil will be placed at this location in order to level out the location and create a recreation area.

B. POLLUTANT SOURCE AND SITE SPECIFIC BMP IDENTIFICATION

The soil classification of the construction or disturbed area is assumed to be inert soil and no Hazardous Toxic RadioactiveWaste (HTRW) soil contamination is expected.

Based on inert soil classification, the expected natural pollutant sources are high turbidity water, soil erosion and sedimentation associated with a typical soil excavation and filling construction project. The drainage patterns are described below and are also illustrated on the attached color-coded maps. Other pollutant sources are identified as potential toxic or non-toxic sources, which are covered in subparagraphs D & E.

Site Specific BMPs (SSBMPs) are described below after the drainage pattern description. General BMPs (GBMP) are described in subparagraph C and the GBMPs are intended to be applicable to all construction areas. The GBMPs are BMPs that must be implemented in addition to the SSBMPs. The SSBMPs and their locations are shown on the detailed construction maps (Attachment 1).

(1) The drainage pattern during the construction of the Marshplain Terrace on the East bank of Napa River in Kennedy Park downstream from Old Tulocay Creek is expected to be directly into the Napa River.

SSBMPs: Since this construction involves in-water construction, mandatory in-water BMPs are provided by the contract specifications in Section 01354, paragraph 3.12. Wetland planting and vegetation should be installed as soon as possible. The discharger shall utilize a type II turbidity curtain to protect Napa River by providing sedimentation control.

(2) The drainage pattern during the construction of the Floodplain Terrace on the East bank of the Napa River in Kennedy Park downstream from Old Tulocay Creek is expected to be down drainage swales and into an existing tidal pond.

SSBMPs: The discharger shall place drilled vegetation on excavation areas located within the Floodplain Terrace. Additionally the discharger will place 2 straw wattles on each slough upstream from their discharge into the existing tidal pond. The straw wattles shall be at separate locations in order to provide two separate barriers to limit sediment flow into the environmentally sensitive tidal pond.

(3) The drainage pattern for the 25 foot wide flat bench between the Marshplain and Floodplain Terraces from station 637+00 to station 680+00 expected to be equally distributed to each the Marshplain and Floodplain Terraces.

SSBMPs: The discharger shall place drilled vegetation on the 25 foot wide flat bench between the Marshplain and the Floodplain Terraces. Due to the flat

surface and low expected flows, additional water discharging barriers (such as straw wattles) are not required.

(4) The drainage pattern for the new training dike on the eastern border of the Floodplain Terrace south of Old Tulocay Creek will be split between the Floodplain Terrace to the west and a system of culverts, grates, and ditches to the east.

SSBMPs The discharger shall place tackified straw with drilled vegetation on the new training dike. Due to the large unimpacted grassy areas to the east of the new training dike, sediment discharge on the landward side is expected to be minimal. As a preventative measure the discharger will place straw wattles in front each grate, culvert, or ditch on the landward side (see attached color coded maps).

(5) Drainage flow at the primary soil disposal location is contained within an enclosed basin prior to draining into the Napa River. The enclosed area currently acts as a settling and collection basin for dredged soil and sediment. Water in the basin passes a log weir structure prior to flowing into the Napa River.

SSBMPs: Since the enclosed area operates as a sediment settling basin, No sediments are expected to reach the river. The Contractor must ensure that the existing log structure at the basin outlet is operating properly. As a preventive measure, straw wattles shall encircle the drainage outlet and one will also be placed crossing the drainage path from the access road to the discharge point.

The major drainage patterns during construction are not expected to change significantly after construction.

C. GENERAL BMPs:

The following GBMP must be applied to all construction activities identified above and are intended to supplement the SSBMPs. Both SSBMPs and GBMPs must be utilized to minimize the potential of stormwater pollution. There are two types of General BMPs: Erosion Control and Sedimentation Control.

(1) The discharger must use the **erosion control** measures stated in the SSBMPs and may use additional measures if desired. The specific measures that can be used are stated in Section 6. The discharger shall ensure all erosion control measures are implemented.

(2) The discharger must use the **sedimentation control** measures stated in the SSBMPs. These specific measures are also listed in Section 8. The discharger shall ensure all erosion control measures are implemented.

D. TOXIC MATERIAL INFORMATION

Generally, the use of any toxic material must be in compliance with federal, state, and local requirements. Cal-OSHA (Title 8, Section 5194) and EM 385-1-1 (USACE Safety and Health Requirements) is contractually invoked on this project (See Section 01505) and this requires the contractor to develop a Written Hazard Communication Program. This program requires a list of any hazardous substances, provide the material safety data sheets (MSDS), and train all employees on their proper use and disposal, including a spill control procedure. The disposal of any toxic waste must be in compliance with federal, state, and local requirement. A Spill Control Plan is required per contract specification (Section 01354, paragraph 1.6.3).

The discharger shall provide a description of any toxic material (lubrication oils, cleaning solvents, fertilizer, pesticides, portable toilet chemicals, etc) that will be transported to the construction site and may potentially be affected by a stormwater event. The discharger shall identify the specific BMPs associated with each toxic material on how to contain the toxic material during a stormwater event. Examples of BMPs are as follows: (1) a waterproof cover or storage area, (2) identification of employee responsibilities before, during, after use of any toxic material in a potential stormwater event situation, (3) using or storing toxic material in an area where there is a natural or man-made secondary containment system, (4) an inventory system for tracking purposes and (5) a periodic spot inspection by the SWPPP coordinator to verify that the construction workers have secured all toxic material at the end of the shift.

If the number of toxic material is relatively small, the daily field logbook may serve as an inventory system to record and track the amount of toxic material being used. If using the field logbook is too cumbersome to track the use of each toxic material, then the discharger may develop a separate tracking system to verify that all toxic material is secured prior to a stormwater event. The identification of any toxic material that may be affected by a stormwater event and the applicable BMPs shall be identified below:

Toxic Material	Quantity	Location Utilized	Storage Location
1._____	_____	_____	_____

BMPs: _____
_____
_____
_____
_____
_____

2._____ _____ _____ _____

BMPs: _____
_____
_____
_____
_____
_____

3._____ _____ _____ _____

BMPs: _____
_____
_____
_____
_____

4._____ _____ _____ _____

BMPs: _____
_____
_____
_____
_____

5_____ _____ _____ _____

BMPs: _____
_____
_____
_____

If necessary, attach additional sheets or attach a procedure addressing the BMPs.

E. NON-TOXIC MATERIAL INFORMATION

The discharger shall also describe any non-toxic construction material (i.e. sand, concrete, aggregate, soil amendments, washing soap, and wastewater, etc) and any equipment that may potentially cause a discharge of material into a receiving water.

Describe all non-toxic construction material that will come in contact with potential stormwater during this project:

_____
_____
_____
_____
_____

Describe all commercial equipment and commercial vehicles that will come in contact with potential stormwater during this project:

_____
_____
_____

Describe all on-site equipment storage, cleaning and maintenance activities:

_____
_____
_____

Describe the disposal procedure of all excess construction material and equipment:

_____
_____
_____

Based on the above inventory, the discharger shall describe the BMPs on how to prevent stormwater pollution from any non-toxic material or associated activity. (examples of BMPs are ensuring certain material is stored in waterproof containers, minimizing the use of certain material exposed to potential rainfall, securing certain material for the evening or weekends, etc, having a map showing where the material and/or equipment is stored or utilized, inspecting all imported material, storing the material with secondary containments or away from drainage inlets)

_____
_____
_____
_____
_____
_____
_____

6. EROSION CONTROL

Erosion control, also referred to as "soil stabilization" is the most effective way to retain soil and sediment on the construction site. The most efficient way to address erosion control is to preserve existing vegetation where feasible, to limit disturbances, and to stabilize and revegetate disturbed areas as soon as possible after grading or construction.

Until permanent vegetation is established, a temporary soil cover, soil compaction, and/or temporary watering to permit settling of loose soil should be utilized. A temporary soil cover such as mulch, temporary seeding, soil stabilizer, binders, fiber rolls, geotextile blankets, temporary vegetation, or permanent seeding must be considered to control potential erosion. As stated by the SSBMPs, the government has directed that the discharger use tackified straw with drilled vegetation as the primary methods of erosion control. The location of the tackified vegetation with drilled vegetation is illustrated on the attached color maps. Some areas only require drilled vegetation due to the presence of tidal water which will prohibit the use of tackified straw. For other areas, the discharger may use additional erosion control methods, if necessary.

The discharger shall attach a proposed schedule to this SWPPP for implementation of the above erosion control measures. See Section 14 for schedule requirements. The proposed schedule shall be developed and attached to this SWPPP.

7. STABILIZATION

The dischargers and the government shall verify the following stabilization requirements prior to submitting a Notice of Termination (NOT) at the end of the revegetation establishment period.

- All soil-disturbing activities are completed.
- A uniform vegetative cover with 70 percent coverage has been established.

If the 70 percent vegetative coverage has not been established, equivalent stabilization measures shall be employed as a substitution. These equivalent stabilization measures include the use of BMPs such as blankets, reinforced channel liners, soil cement, fiber matrices, geotextiles or other erosion resistant soil coverage or treatment.

If the background native vegetation covers less than 100 percent of the surface, such as arid areas, the 70 percent coverage criteria can be adjusted using the following calculation example: If the native vegetation covers only 50 percent of the ground surface, as an example, then 50 percent times the original 70 percent criteria = 35 percent as the "adjusted criteria". The vegetation on the disturbed area must cover 35 percent for the total uniform surface coverage in order to meet the acceptance criteria. <u>To permit use of the adjusted criteria, the discharger must take sufficient photographs prior to the project to demonstrate that the native vegetation cover was less than 100 percent.</u>

The above criteria shall be used during the walk-through or drive through inspection described in section 2. If the stabilization inspection is acceptable, the government shall proceed to submit the Notice of Termination.

8. SEDIMENTATION CONTROL

Generally, sedimentation control BMPs shall consist of filtration and barrier devices along the site perimeter and at all operational inlets to a storm water drain system. During a rain event, the contractor must inspect all BMPs for possible flooding and filtration effectiveness.

For this project, the sedimentation controls were already identified as Site Specific BMP (SSBMP) in paragraph 5B. The SSBMPs are repeated here for clarity:

Construction Site	**Required Sediment Control (Site Specific BMP)**
Marshplain Terrace D/S of Tulocay Creek.	Turbidity Curtain.
Floodplain Terrace D/S of Tulocay Creek.	Straw wattles as illustrated on the color coded maps.
25 ft. wide Flat bench	Straw wattles as illustrated on the maps.
New Training dike	Straw wattles as illustrated on the maps.
Disposal Site in Kennedy Park	Ensure that log weir is operable. Straw wattles as illustrated on the maps.

The color coded maps showing the location of sedimentation controls for this project can be found in Attachment 1.

In addition to the required sedimentation control, the discharger may choose to incorporate additional sedimentation control practices. These additional sediment control practices may include the use of fiber rolls, silt fences, straw bale barriers, gravel inlet filters, sandbag dikes, fiber rolls, earth dikes, brush barriers, drainage swales, check dams, subsurface drain, straw bale dikes, or other controls.

9. NON-STORM WATER MANAGEMENT

The non-storm water discharge management and the BMPs are as follows:

A.	Accidental discharges.	BMP: See Spill Control Plan
B.	Discharge of construction worker wastewater	BMP: See below.
C.	In-water construction work	BMP: See below.
D.	Decant water from Wet Soil	BMP: See below.

A. The Spill Control Plan is required by contract specification Section 01354, paragraph 1.6.2. Compliance to the Spill Control Plan is mandatory.

B. The Discharge of construction worker wastewater (portable toilet water, office trailer wastewater, etc) must be in accordance with state laws and/or local ordinance

C. For In-water construction work, the contractor shall refer to the contract specification, Section 01354, paragraph 3.12 which requires use of a turbidity curtain, implementation of a Self-Monitoring Program, and other contractual requirements designed to protect the Napa River during in-water construction work.

D. During in-water construction, wet saturated soil may be loaded onto trucks for transportation to the Disposal Site. The discharger shall minimize the leakage from the trucks and eliminate any discharge from any saturated soil drying areas. The SWPPP Coordinator shall be responsible for assessing this leakage and provide correct action. These corrective actions may involve the following options:

(1) Determining if the leakage is occurring and modify the trucks if possible.

(2) Provide a temporary berm area for dewatering the soil prior to transportation.

(3) Provide a temporary berm to capture the water to prevent a direct discharge into the river and a discharge into a surface water drainage area (i.e. ag ditch).

Paragraph 3.11.1, Section 01354 to the Contract and Provision A.4 of the Napa River Waste Discharge Requirements strictly prohibits the discharge of decant water from any saturated soil drying sites, to any surface waters or any surface water drainage areas. To demonstrate compliance to this prohibition, the SWPPP coordinator shall document the BMPs that will prevent this type of discharge here:

_____
_____
_____
_____
_____
_____

Spraying portable water for the purpose of dust control is not considered a discharge requiring Non-Storm Water Management.

10. POST CONSTRUCTION STORM WATER MANAGEMENT

The original plans and specification provide the revegetation, landscaping, and drainage structure requirements that are designed to reduce any stormwater pollutants in a post-construction discharge. Per Section 02920L of the contract specification, there is also a requirement for the discharger to complete the revegetation establishment requirements.

The Post-Construction Storm Water Management shall consist of inspecting the site and then recording the plant installation, survival and mortality counts, identify losses and inspect any erosion control fabric that is already invoked by Section 02920L of the contract specification.

In addition to the vegetation inspection and record keeping specified by Section 02920L of the contract specification, the discharger shall also inspect for any potential risk for storm water pollution. This inspection is separate and the discharger shall report this inspection using the same form used in Section 11. Government notification is required if any deficiency is discovered during this inspection. All requirements of the General Permit are still mandatory during the revegetation establishment period.

11. MAINTENANCE, INSPECTION, AND REPAIR DURING CONSTRUCTION

The SWPPP coordinator shall be responsible to inspect and maintain all BMPs identified in this SWPPP to ensure its effectiveness. The inspection shall be conducted twice a week, on every Monday and every Friday beginning with the start of soil disturbing activities. This inspection also requires that the SWPPP coordinator check and document the current weather forecast and 5 day weather forecast. The inspection must be documented using the inspection form that is provided on the next page. By completing this inspection form at least twice a week, this will ensure that the weather is being monitored and that the BMPs are being maintained.

In addition to the twice a week inspection, an inspection must be performed "before", "during", and "after" a rainfall or storm event. If the rainfall or storm event lasts more than 24 hours, then the inspections must also be performed every 24 hours "during" the rainfall or storm event. Two inspections in a single day is not necessary if the "before", "during" and "after" inspections also coincide with the normal Monday or Friday inspection.

The inspection must assess the BMP effectiveness and implement repairs or design changes as soon as possible depending on field conditions. Equipment, materials, and workers must be available for any rapid response necessary to prevent stormwater pollution. All completed inspection forms should be filed in a three ring binder and must be available when requested by the government or the RWQCB. After project completion, the three-ring binder and all completed inspection forms shall be submitted to the government for retention for a period of three years.

The SWPPP coordinator shall ensure that equipment, materials, and workers are made available for rapid response to failures and emergencies.

The attached Inspection Form is required to meet the intent of Section A and B of the SWPPP requirements. In certain situations, the RWQCB may require the discharger to conduct additional site inspections, to submit reports, or perform sampling and analysis.

<u>For a post construction inspection during the revegetation period</u>, the words "Post-Construction" shall be entered in the block that is normally used to record "Monday or Friday". The Post Construction Inspection shall be conducted at least once every two months for the 1st year of the revegetation period then once every three months for the 2nd and 3rd year of the revegetation period. In addition to the above inspection cycle, the discharger shall also conduct an inspection "before", "during" and "after" a major rain event in order to be in compliance with the General Permit during the post contruction period.

SITE INSPECTION/MAINTENANCE/REPAIR FORM - Required by SWPPP, SECTION 11
(reproduce this sheet and complete one sheet for each inspection. File the completed inspection record in a three ring binder.)

Date and Time of Inspection:
Weather Information during Inspection Date:
Weather Forecast (long range 5 day forecast):
If this is a rain event inspection, record "before", "during", or "after". For a non-rain event maintenance inspection, record "Monday" or "Friday" Inspection.
BMP Inspection Results (narrative description of all BMPs, inspection results, and/or description of any inadequate BMPs. If necessary, write on other side of this form). This must include observations of erosion controls, sediment controls, toxic and non-toxic BMPs and non-storm water controls.
Inspection Results of relevant outfalls, discharge points into the river or downstream ag ditch from the Disposal Site. (narrative description of water being discharged, if any)
If applicable, Corrective Action Taken and being Taken (including BMP maintenance activities, repairs, and any necessary changes to SWPPP and implementation dates)
SWPPP Coordinator conducting Inspection (Name, Signature, and Date)

12. MONITORING PROGRAM REQUIREMENTS

On April 26, 2001, the State Water Resources Control Board adopted Resolution 2001-046 which modified the general permit as ordered by the Superior Court, County of Sacramento, due to a lawsuit filed by the SF, Santa Monica, & San Diego Baykeepers. The modification requires a monitoring program be conducted by the dischargers on a Section 303(d) list water body. Napa River is 303(d) listed for sedimentation or siltation and therefore samples must be collected to demonstrate that the BMPs are effective in preventing stormwater pollution into Napa River. Water collection shall be as follows:

a. Water samples must be collected during the first 2 hours from a rain event that will discharge significant water (more than 50 gallons) from the site directly into Napa River.

b. The contractor must collect the water samples at the locations downstream of the BMPs to determine the effectiveness of the BMPs. <u>According to the permit, it is NOT necessary to collect water discharging into an MS4 system</u> (i.e. "An MS4 is a Municipal Stormwater Sewer System which means any stormwater sewer inlet). Water samples are normally collected from water flowing past a stormwater BMP and directly into Napa River. The Pond shown on sheet C-4 is not considered a 303(d) listed water body.

c. Safety takes precedence over water sample collection. Collect water samples during daylight hours only. Collect water samples only when it is safe to do so. If it is not safe to collect water samples due to flooding, mud engulfment, extreme downpour, lightning, record this fact on the Inspection Sheets (See Section 11). It is also not necessary to collect more than four (4) samples per month.

d. The water samples shall be analyzed for "settleable solids" and "total suspended solids". Settleable solids is a field measurement using an Imhoff Cone. Pour 1 liter of water into the cone and allow the water to settle for 1 hour. After one hour, record the "mg/L" of settleable solids at the bottom of the cone on the Inspection Form of Section 11 (Inspection Result Section). An Imhoff Cone (and stand to hold the cone upright) may be obtained from a laboratory supply company (about $100 or less). Total Suspended Solids (mg/L) must be analyzed by a laboratory (approximately $10.00 per sample) Cal-Test Analytical Lab at 1885 North Kelly Road, Napa CA is a suggested laboratory and the POC is Peter Halpin at 707-226-1001. The demolition contractor has the option to use another analytical lab if the laboratory is certified to conduct TSS measurements. The contractor shall attach the TSS lab report to the dated Inspection Form of Section 11.

e. All settleable solids and TSS measurements are subject to review by the US Army Corps of Engineers, a regulatory agencies, and/or the general public. The general permit does not specify any acceptance criteria and therefore the data will be evaluated by the US Army Corps of Engineers. It is expected that most of the results will be non-measureable settleable solids and TSS. If any measureable settleable solids and TSS are found, the contractor shall notify the US Army Corps of Engineers. The contractor must also read and comply with all provisions of the modification to WQ order 99-08-DWQ which includes monitoring of known and spilled pollutants at the construction site.

13. TRAINING

The SWPPP coordinators identified in Section 13 must be appropriately trained and the training shall be documented in this section. Training should be both formal and informal, and may occur on an ongoing basis when it is appropriate and must include, as a minimum, at least one formal training class and/or workshop offered by the SWRCB, RWQCB, a locally recognized agency, a professional organization, or academic college or university, on Storm Water Pollution Prevention Measures.

Training classes and completion date attended by the Primary SWPPP coordinator:

_____
_____
_____

Training classes and completion date attended by the Secondary SWPPP coordinator:

_____
_____
_____

14. LIST OF ON-SITE SWPPP COORDINATOR(s)

The discharger shall designate a Primary SWPPP coordinator who has the authority and primary responsibility to implement the requirements of this SWPPP. A Secondary SWPPP coordinator shall also be identified who will assume the SWPPP coordinator's responsibilities in the event the Primary SWPPP coordinator is not on-site. Either the Primary or Secondary SWPPP coordinator must be on-site during normal construction hours. The Primary and Secondary SWPPP coordinator shall have a cellular phone during normal working hours and have an evening or after hours phone number. The SWPPP coordinator shall be responsible to monitor the weather, including long range forecast and weekend forecast, and have the authority to mobilize construction workers to implement the BMPs identified in this SWPPP. The names of the Primary and Secondary SWPPP Coordinator shall be recorded here:

Primary SWPPP Coordinator Name:_____

Primary SWPPP Coordinator Duty Cell Phone: _____

Primary SWPPP Coordinator After Hours Phone: _____

Secondary SWPPP Coordinator Name:_____

Secondary SWPPP Coordinator Duty Cell Phone: _____

Secondary SWPPP Coordinator After Hours Phone: _____

The SWPPP coordinator shall be responsible to ensure full implementation of this SWPPP. This also includes briefing the government, the public or a RWQCB representative on any details of maintaining compliance with the General Permit and this SWPPP.

Other responsibilities shall include briefing any subcontractor that conducts work on the site. The SWPPP coordinator shall ensure all subcontractors are aware of the requirements of this SWPPP and any work conducted by the subcontractor must not affect any of the BMP designed to eliminate Storm Water Pollution.

15. OTHER PLANS

An initial schedule for BMP implementation shall be generated by the discharger and attached to this SWPPP. This schedule shall include all scheduled training, schedule to install all BMPs, including site specific BMPs, general BMPs, toxic and non-toxic material BMPs, erosion control BMPs, sedimentation control BMPs, and completion of the maintenance/inspection/repair forms. The schedule shall be reviewed weekly and updated when changes occur. An initial schedule must be attached to this SWPPP prior to certification. The discharger is responsible to update this schedule to suit actual site conditions. If the changes are frequent, the discharger may consider using a computer program to identify the initial schedule and then make the changes when necessary. An updated schedule must be made available when requested by the government or a visitor from the RWQCB.

During construction, the discharger shall provide a site map showing (a) storage of soil or waste, (b) vehicle storage and service areas, (c) construction material loading and unloading areas and access areas and road, (d) equipment storage, cleaning, and maintenance areas. The discharger generated site map shall also provide information regarding the construction site surface area in square feet, the estimated runoff coefficient before and after construction, and the percentage that is impervious (paved or roofed, etc) Runoff Coefficients for various soil conditions may be obtained from the Civil Engineer Review Manual, 6^{th} Ed, Lindeburg. An updated site map must be made available when requested by the government or a visitor from the RWQCB.

There are no other plans except for the original construction plans, the original construction specifications, and the referenced documents in the original contract specifications. The referenced applicable documents to the original contract specifications include this SWPPP, the General Permit requirements, and the regulatory requirements of the Waste Discharge Requirements (WDR).

16. PUBLIC ACCESS

As described in Section 3, this SWPPP should also be on file with the RWQCB and be made available to the public under Section 308(b) of the Clean Water Act.

17. SWPPP CERTIFICATION

Discharger Certification of the Final SWPPP: A Main Construction Contractor's manager, operator, superintendent, or a person who has responsibility for the overall operation of the construction activity must also sign and certify the SWPPP. The on-site Primary SWPPP coordinator and Secondary SWPPP coordinator are also required to sign and certify the SWPPP. Prior to Certification, the NOI Permit and the General Permit must be attached and the Waste Discharge ID (WDID) be recorded here: _____.

Prior to Certification, all BMPs must be identified, all blanks filled in, all checklists completed and a time schedule to implement each BMP must be attached. A schedule for BMP implementation shall be generated by the discharger and attached to this SWPPP. The discharger is also responsible to revise and update this SWPPP and the attached time schedule when changes occur.

"I certify under the penalty of law that this document were verified to be applicable to this construction project to the best of my knowledge and that compliance with the SWPPP and the General Permit requirements are mandatory. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I also understand that I must give notice to the government, the San Francisco Bay RWQCB, and any local storm water management agency of any planned changes in the construction activity which may result in noncompliance with the SWPPP or the General Permit requirements. I have also read, understand, and intend to comply with all provisions of the General Permit including the Standard Provisions for Construction Activities. I also understand that I am responsible for recognizing any changes in the project, which may affect this SWPPP and the requirements of the General Permit."

CERTIFICATION SIGNATURE_____DATE_____

PRINT NAME_____

PRIMARY SWPPP COORD. SIGNATURE_____DATE_____

PRINT NAME_____

SECOND. SWPPP COORD. SIGNATURE_____DATE_____

PRINT NAME_____

18. ANNUAL CERTIFICATION AND NONCOMPLIANCE REPORTING

The SWPPP coordinator shall complete the annual certification requirement that all construction activities are in compliance with the requirements of this SWPPP and the General Permit. This Annual Certification is also based on the completed site inspection forms per Section 11 of this SWPPP and is normally completed by July 1 of each year. Since July 1 may be too early for this project, the first annual certification may be completed 60 days after the beginning of soil disturbing activities. For the post construction or revegetation period, the annual certification shall be completed by July 1st of each year. The Primary SWPPP coordinator shall sign a memorandum of record and file this memorandum of record in the three ring binder with the site inspection records. The Certification Statement in the memorandum of record shall read as follows:

"I certify under the penalty of law that this construction project is in compliance with the SWPPP and the General Permit requirements to the best of my knowledge. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

If there is a discovery of noncompliance and/or the annual certification statement cannot be completed due to non-compliance, a letter must be sent to the San Francisco Bay RWQCB with a copy to the government reporting the details of the non-compliance within 30 days upon discovery. This letter must also describe any corrective action measures taken, assessment of any potential damage or increased risk to stormwater pollution, actions necessary to achieve compliance and a time schedule indicating when compliance will be restored. The time schedule is subject to modification by the RWQCB.

19. ATTACHMENTS

ATTACHMENT 1 - DETAILED MAPS showing Drainage Patterns with Erosion and Sedimentation control locations.

a.	Sheet C-2	General Plan 100 Scale with erosion and sediment controls
b.	Sheet C-3	General Plan 100 Scale with erosion and sediment controls
c.	Sheet C-4	General Plan 100 Scale with erosion and sediment controls
d.	Sheet C-5	General Plan 100 Scale with erosion and sediment controls
e.	Sheet C-28	Cross Sections Terrace Elevation Sta. 12+00 to Sta. 20+00
f.	Sheet C-29	Cross Sections Terrace Elevation Sta. 20+00 to Sta. 26+00
g.	Sheet C-30	Cross Sections Terrace Elevation Sta. 30+00 to Sta. 34+00
h.	Sheet C-31	Cross Sections Terrace Elevation Sta. 42+00 to Sta. 46+00
i .	Sheet C-48	Disposal Site and Secondary Borrow Sites

ATTACHMENT 2 - CONTRACTOR’s SCHEDULE TO IMPLEMENT BMPs
(To be attached by the contractor prior to certification)

ATTACHMENT 1

DETAILED

MAPS

WITH

DRAINAGE PATTERNS

a.	Sheet C-2	General Plan 100 Scale with erosion and sediment controls
b.	Sheet C-3	General Plan 100 Scale with erosion and sediment controls
c.	Sheet C-4	General Plan 100 Scale with erosion and sediment controls
d.	Sheet C-5	General Plan 100 Scale with erosion and sediment controls
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h.	Sheet C-31	Cross Sections Terrace Elevation Sta. 42+00 to Sta. 46+00
i .	Sheet C-48	Disposal Site and Secondary Borrow Sites

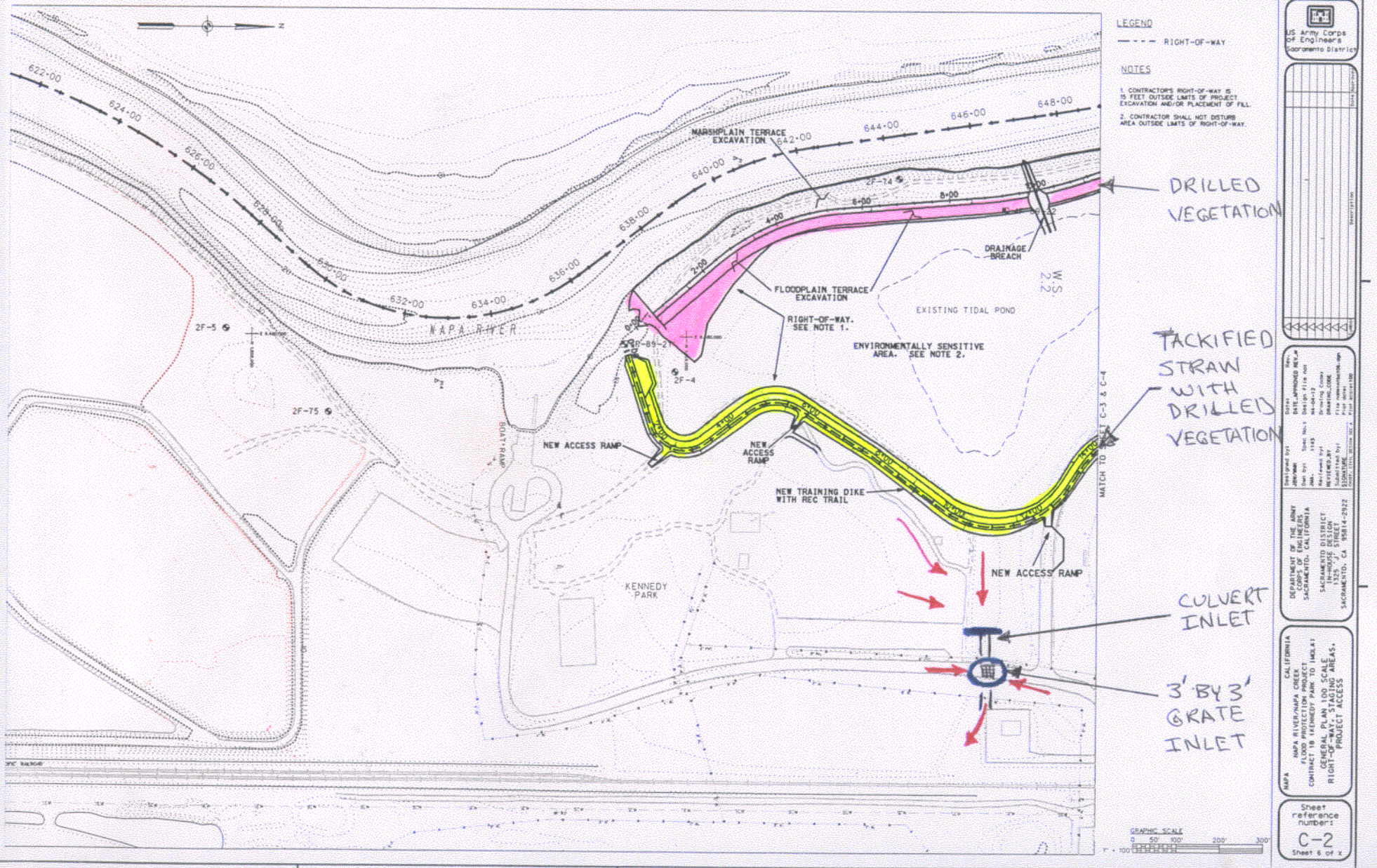
LEGEND:

TACKIFIED STRAW WITH DRILLED VEGETATION

DRILLED VEGETATION ONLY

DRAINAGE FLOW

STRAW WATTLE



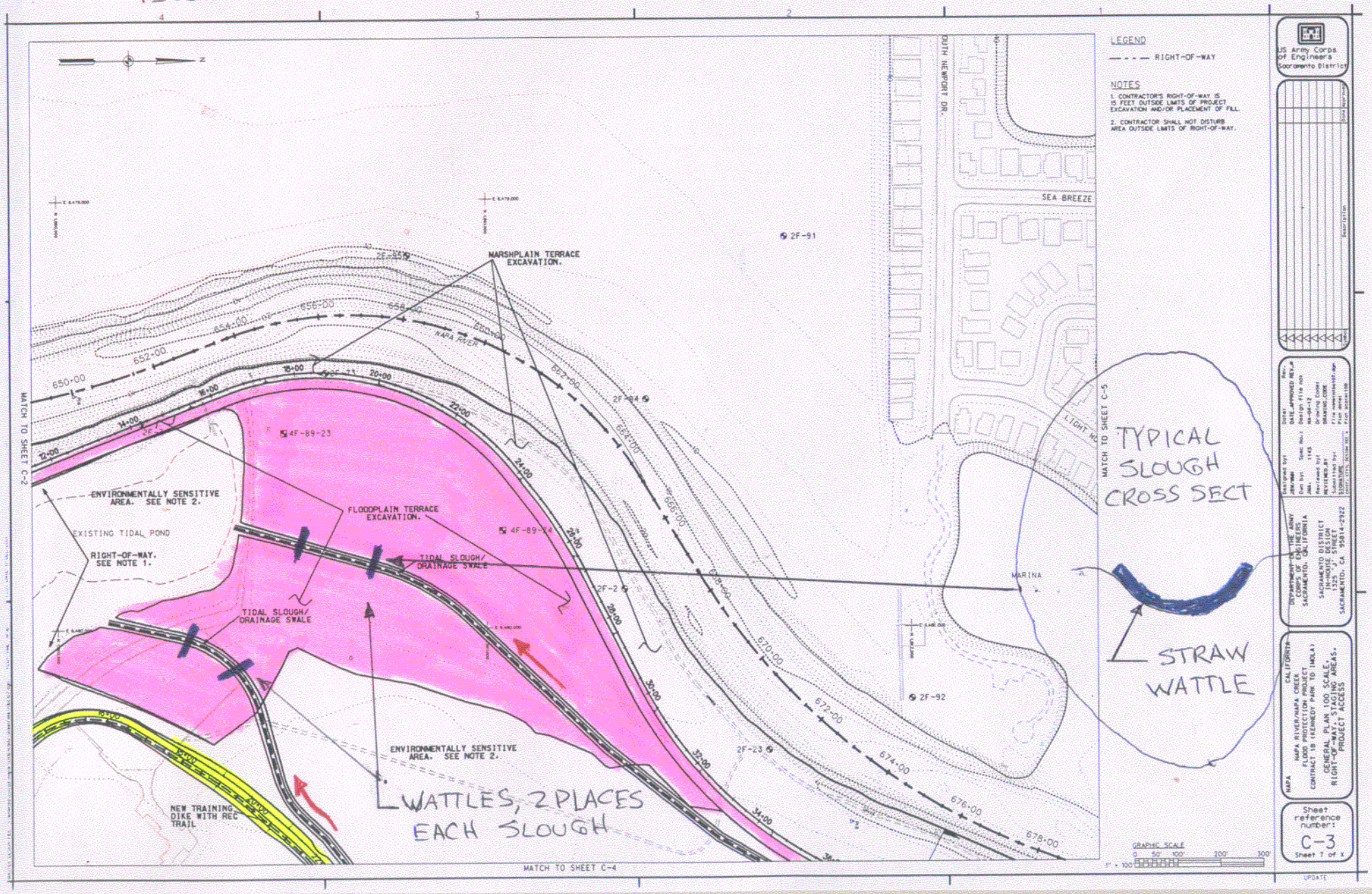
LEGEND

TACKIFIED STRAW WITH DRILLED VEGETATION

DRILLED VEGETATION ONLY

DRAINAGE FLOW

STRAW WATTLE



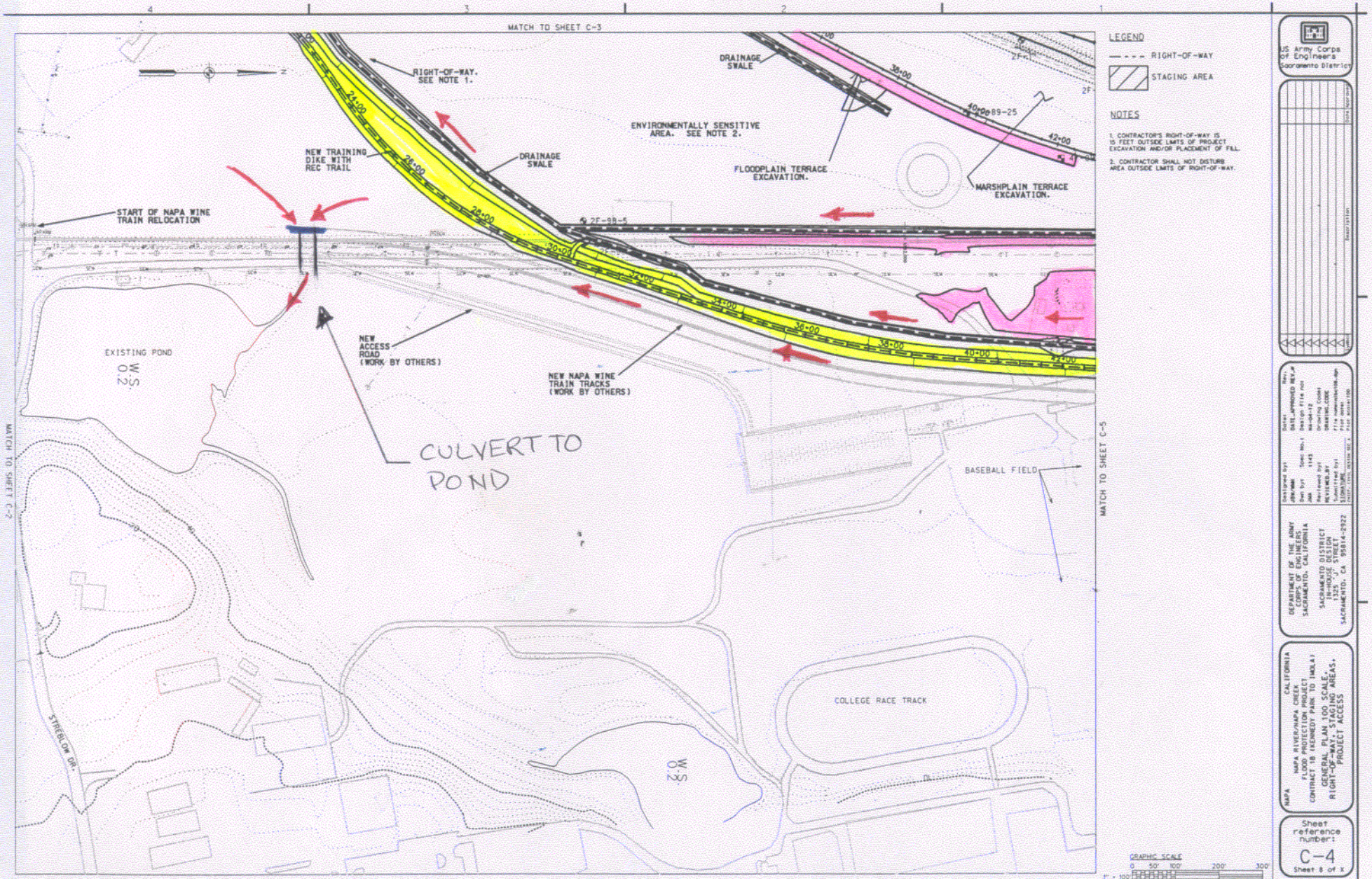
LEGEND:

TACKIFIED STRAW WITH DRILLED VEGETATION

DRILLED VEGETATION ONLY

DRAINAGE FLOW

STRAW WATTLE



US Army Corps of Engineers
Sacramento District

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO, CA 95814-2922

NAPA RIVER/NAPA CREEK
FLOOD PROTECTION PROJECT
CONTRACT 1B (KENNEDY PARK TO HWY 29)
NAPA CALIFORNIA

GENERAL PLAN 100 SCALE,
RIGHT-OF-WAY, STAGING AREAS,
PROJECT ACCESS

Sheet reference number:
C-4
Sheet 8 of X

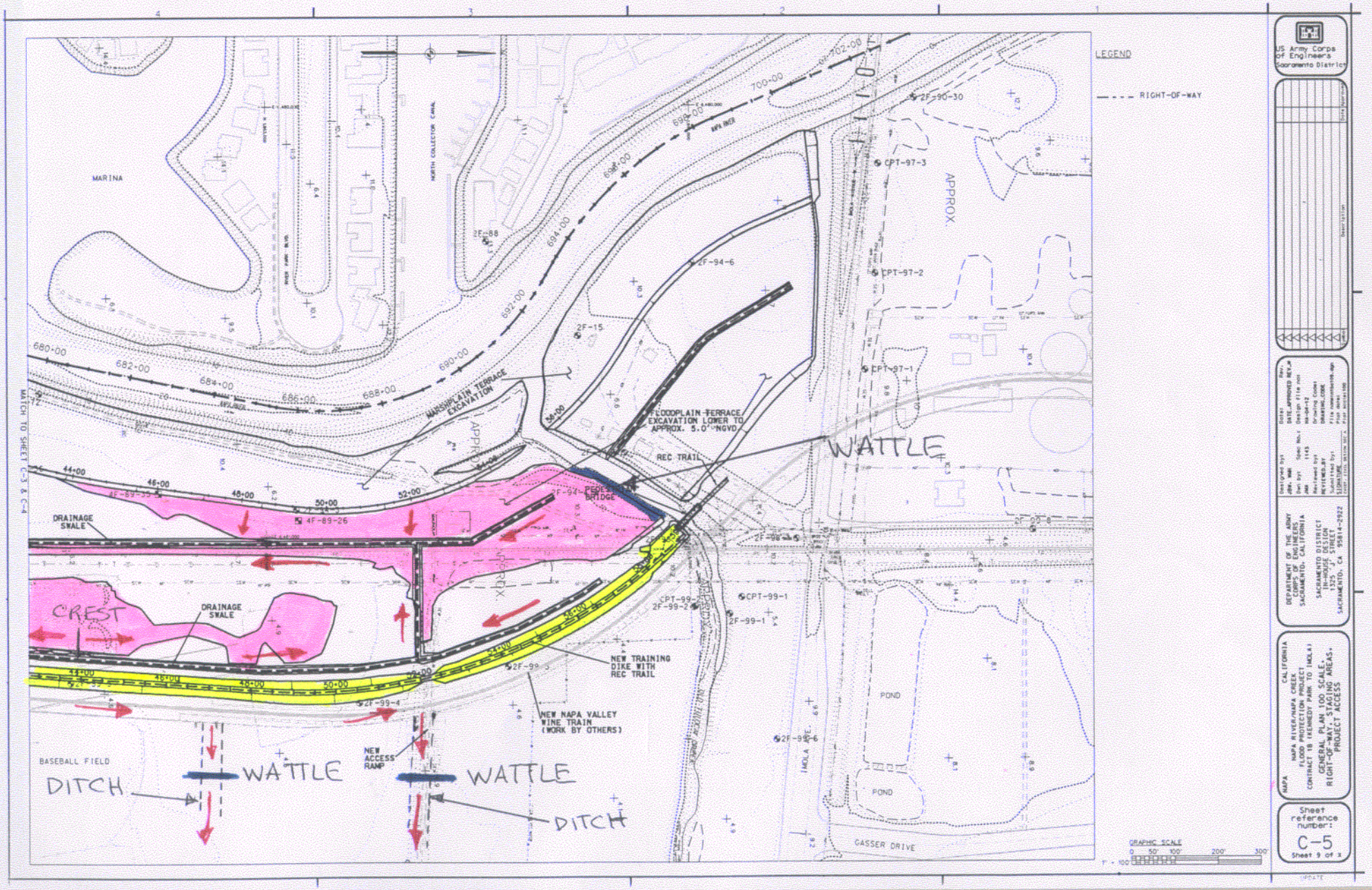
LEGEND:

TACKIFIED STRAW WITH DRILLED VEGETATION

DRILLED VEGETATION ONLY

DRAINAGE FLOW

STRAW WATTLE



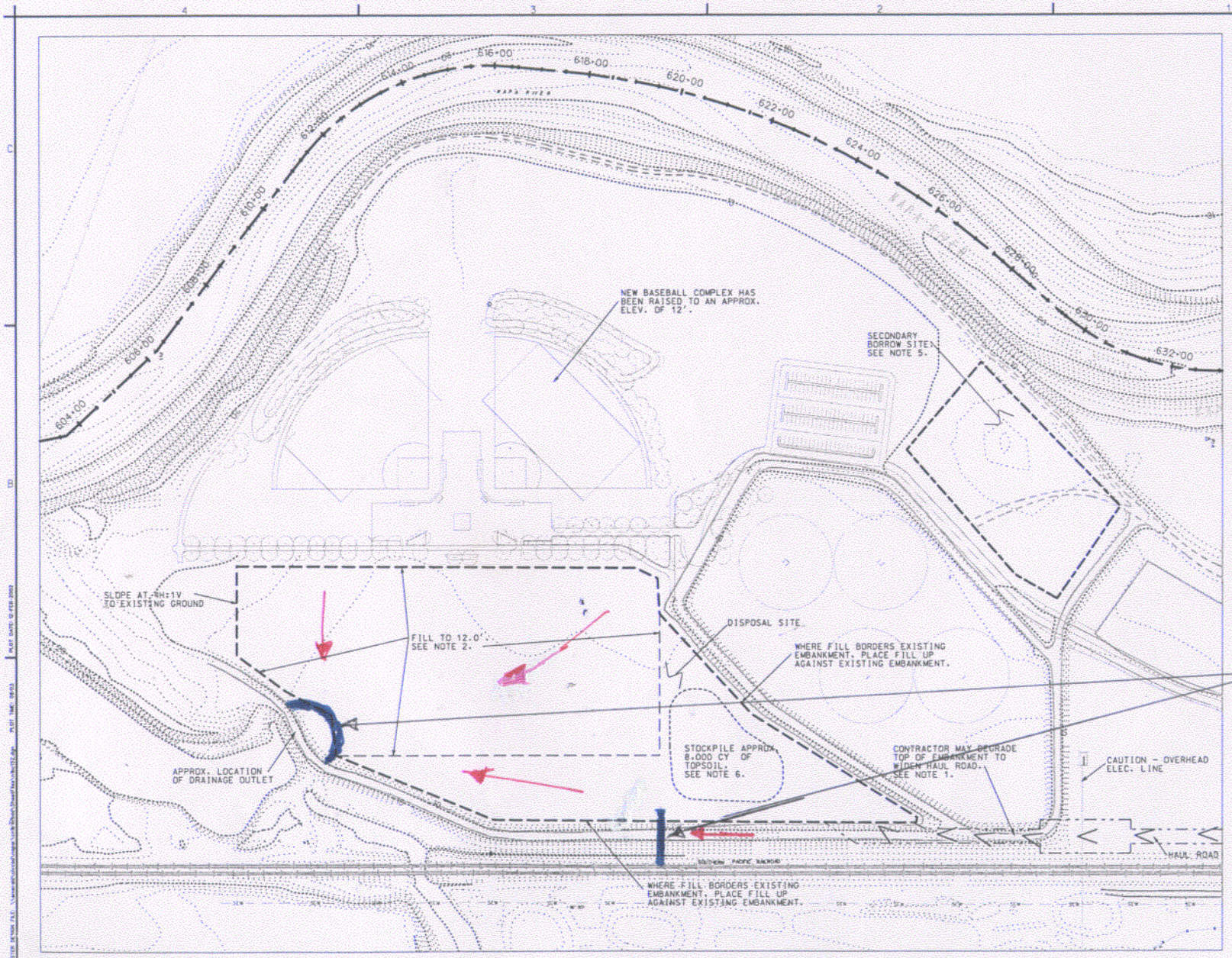
LEGEND

TACKIFIED STRAW WITH DRILLED VEGETATION

DRILLED VEGETATION ONLY

DRAINAGE FLOW

STRAW WATTLE



LEGEND

- LIMITS OF DISPOSAL SITE
- LIMITS OF SECONDARY BORROW SITE
- HAUL ROAD

NOTES:

1. CONTRACTOR MAY TEMPORARILY LOWER EXISTING EMBANKMENT ALONG HAUL ROAD TO ACCOMMODATE TWO-WAY TRAFFIC. CONTRACTOR SHALL RESTORE EMBANKMENT TO ORIGINAL CONDITION AND REPLACE AC TRAIL AT COMPLETION OF CONTRACT. SAFETY BARRICADES SHALL BE PLACED WHERE AC TRAIL IS TEMPORARILY CLOSED.

2. WITHIN LIMITS SHOWN, FILL SHALL BE PLACED TO ELEVATION INDICATED PRIOR TO REMAINDER OF DISPOSAL SITE BEING USED. REMAINDER OF DISPOSAL SITE SHALL BE FILLED NO HIGHER THAN 12.0'.

3. ENTIRE DISPOSAL SITE SHALL BE GRADED TO DRAIN TOWARDS EXISTING DRAINAGE OUTLET LOCATED AT SOUTHEAST CORNER OF SITE.

4. 3" PLUS DEBRIS SCREENED FROM THE TERRACE EXCAVATION MAY BE DISPOSED OF IN BOTTOM OF DISPOSAL SITE. DEBRIS MAY BE PLACED TO A MAXIMUM ELEVATION OF 8.0', WITH A MINIMUM OF 4.0' OF COVER PLACED OVER THE TOP OF ANY DEBRIS.

5. SECONDARY BORROW SITE SHALL ONLY BE USED IF SUFFICIENT SATISFACTORY MATERIAL FOR TRAINING DIKE FILL CANNOT BE OBTAINED FROM TERRACE EXCAVATION.

6. STOCKPILE 8,000 CUBIC YARDS OF TOPSOIL STRIPPINGS FROM FLOODPLAIN TERRACE EXCAVATION FOR FUTURE USE. STOCKPILE HEIGHT SHALL NOT EXCEED 6' ABOVE SURROUNDING FILL ELEVATION.

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SACRAMENTO, CALIFORNIA
SACRAMENTO DISTRICT
HAZARDOUS DESIGN
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NAPA RIVER/NAPA CREEK FLOOD PROTECTION PROJECT
CONTRACT 1B (KENNEDY PARK TO IMOLA)
CALIFORNIA
DISPOSAL SITE AND SECONDARY BORROW SITES

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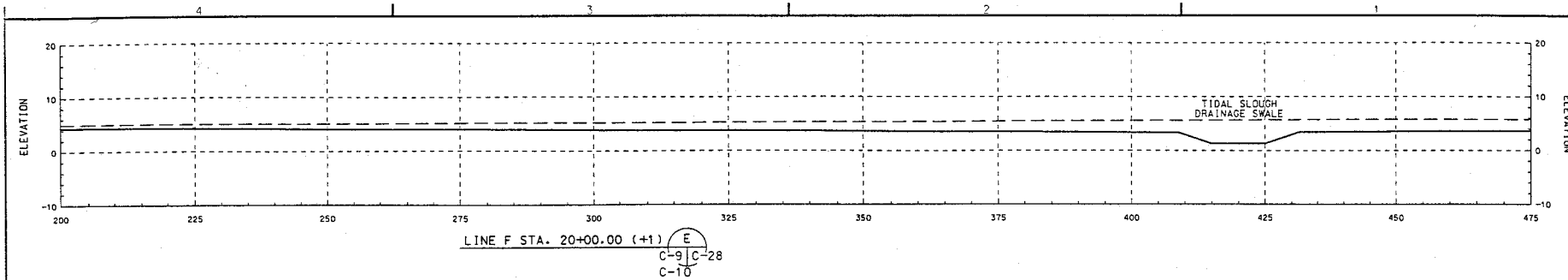

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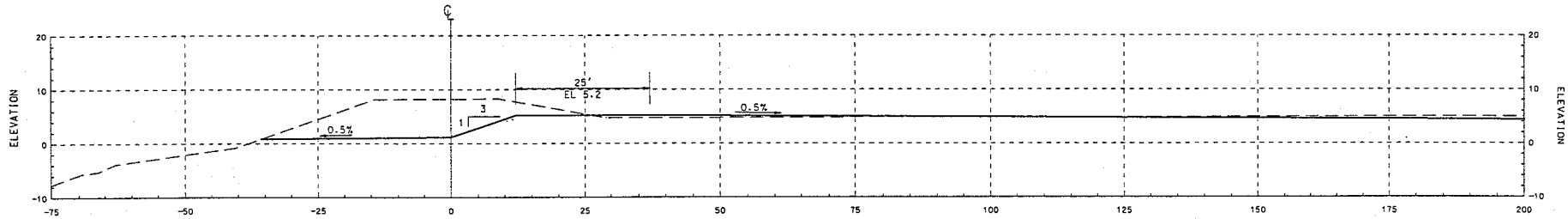

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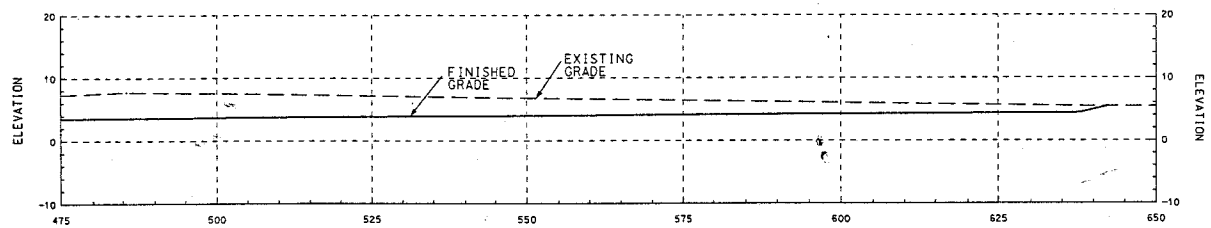

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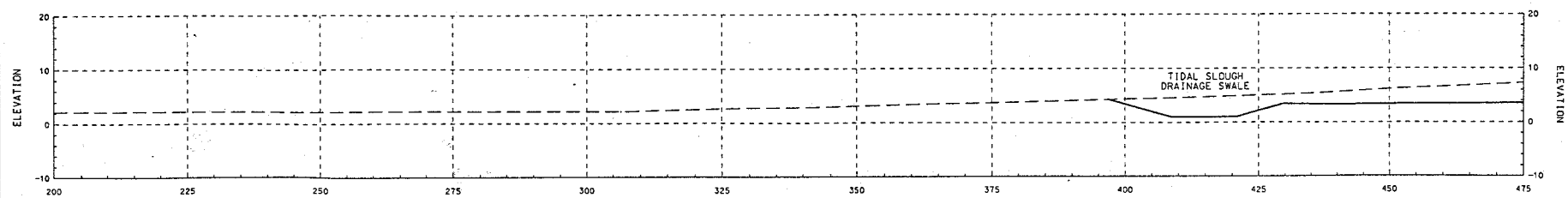

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SACRAMENTO, CALIFORNIA

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NAPA RIVER/NAPA CREEK
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CONTRACT 18 (KENNEDY PARK TO IMOLA)
CROSS SECTIONS
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STA. 12+00 TO STA. 20+00

NAPA CALIFORNIA

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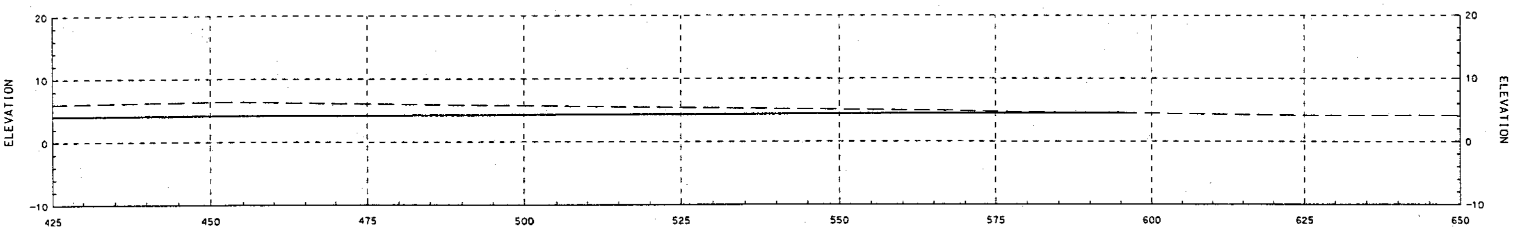

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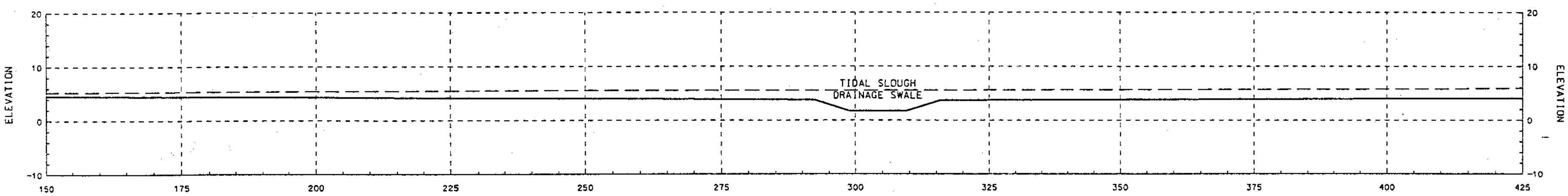

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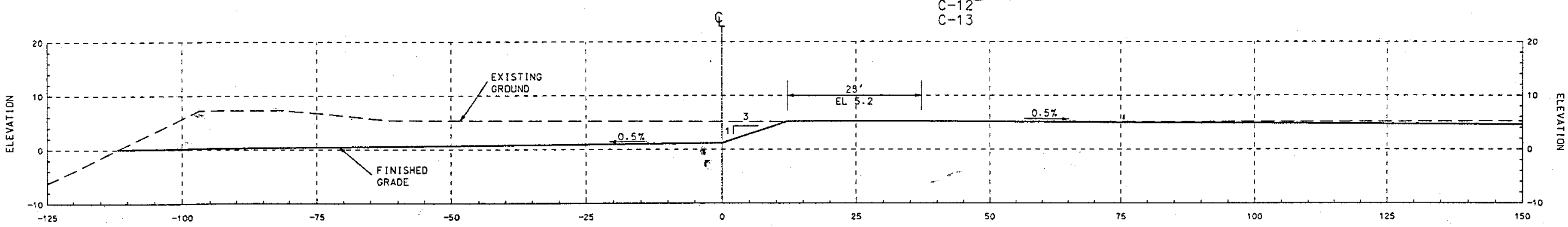

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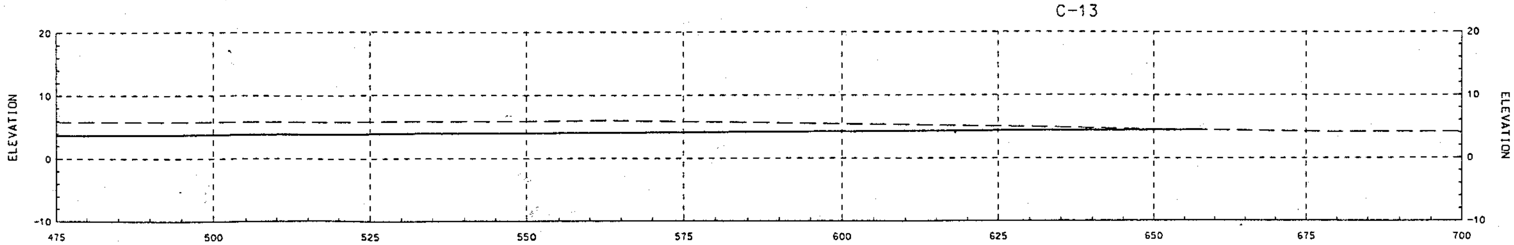

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NAPA CALIFORNIA
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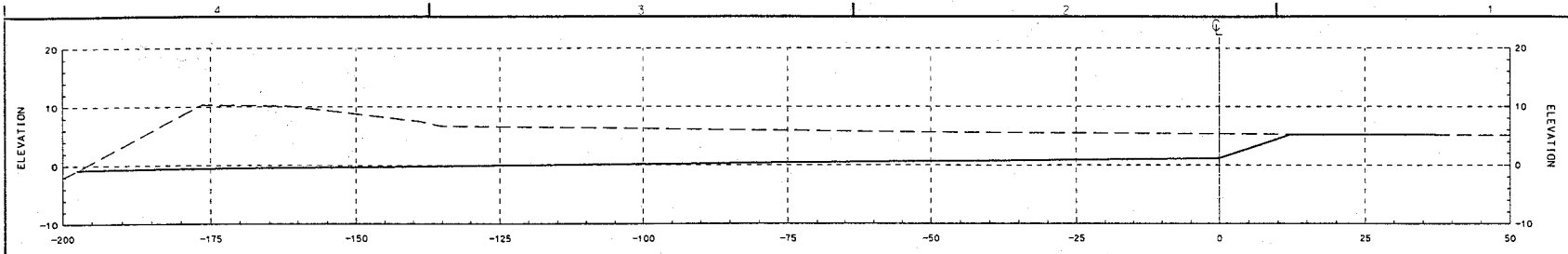

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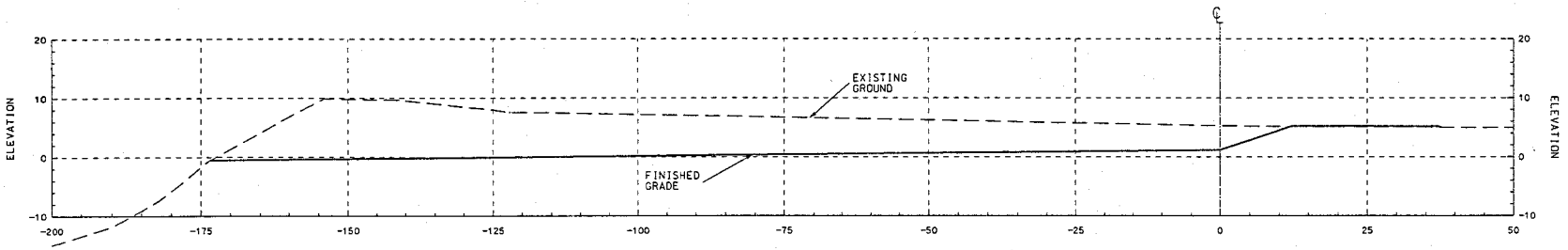

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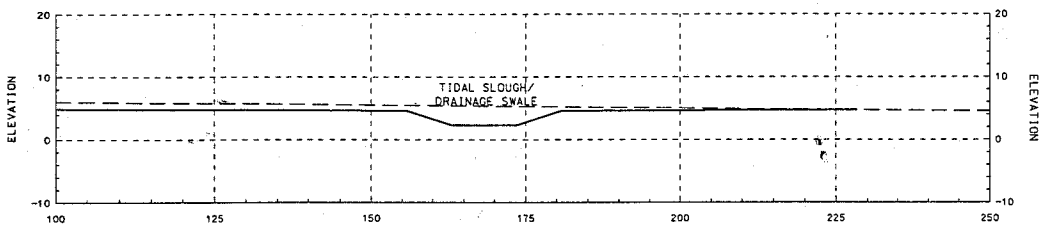

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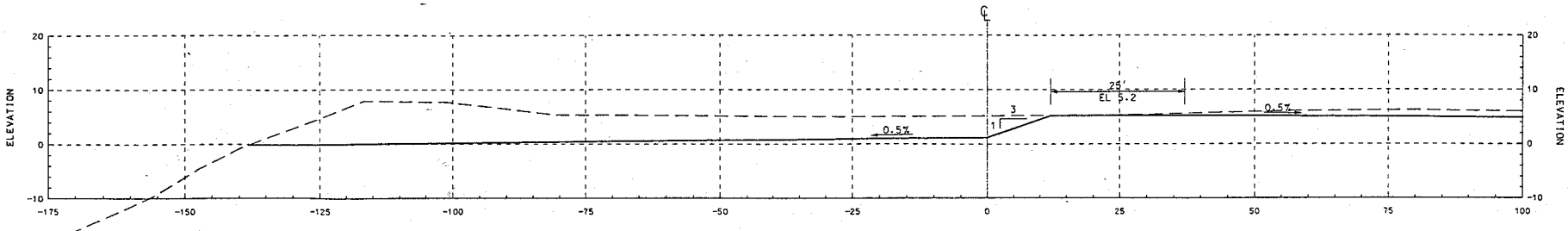

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CORPS OF ENGINEERS
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NAPA
NAPA RIVER/NAPA CREEK
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CONTRACT 1B (KENNEDY PARK TO IMOLA)
CALIFORNIA
CROSS SECTIONS
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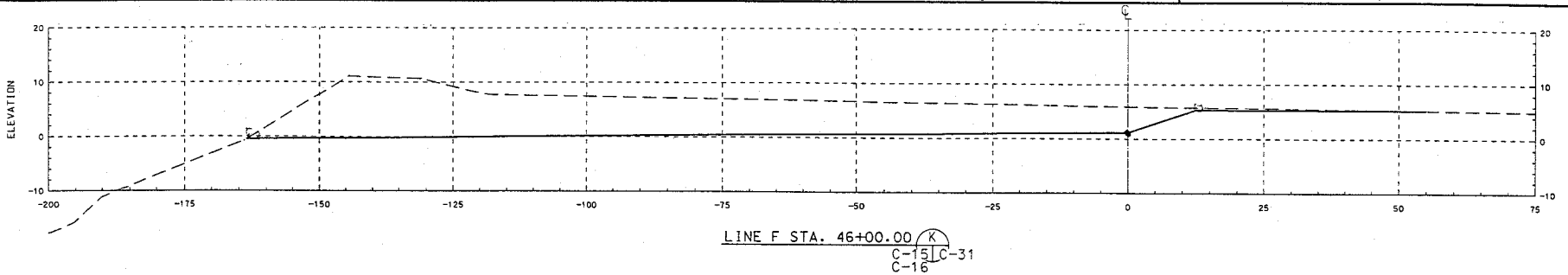

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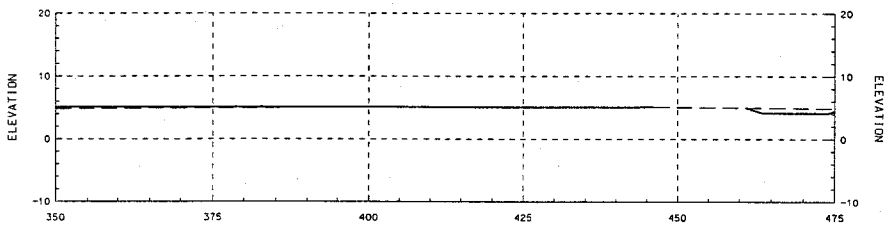

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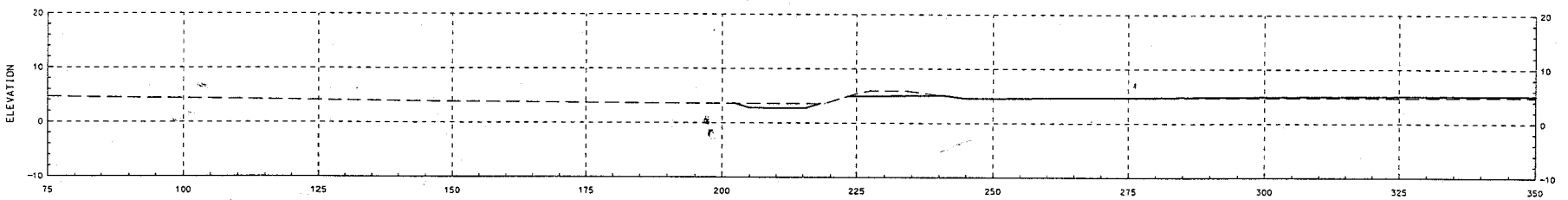

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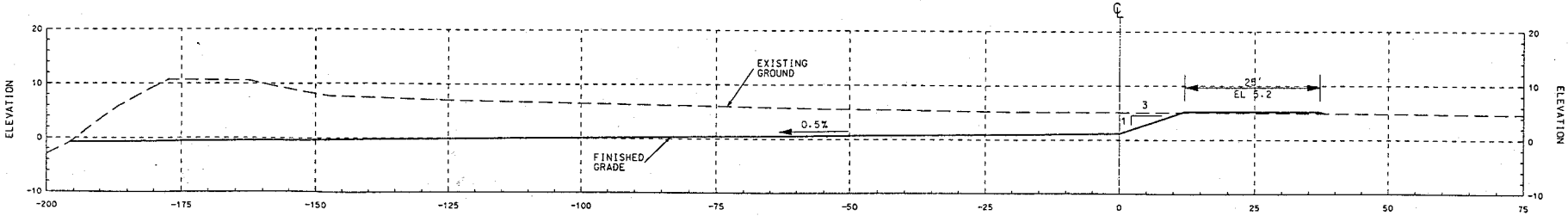

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CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

SACRAMENTO DISTRICT
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1325 J STREET
SACRAMENTO, CA 95814-2922

Designed by:
Drawn by:
Reviewed by:
Submitted by:
Date:
Spec No.
Design file no:
Drawing Codes
DRAWING.CODE
File name
Plot date
Plot scale

NAPA
CALIFORNIA
NAPA RIVER/NAPA CREEK
FLOOD PROTECTION PROJECT
CONTRACT 10 (KENNEDY PARK TO IMOLA)
CROSS SECTIONS
TERRACE EXCAVATION
STA. 42+00 TO STA. 46+00

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UPDATE

ATTACHMENT 2

CONTRACTOR'S

SCHEDULE

TO IMPLEMENT

SWPPP

BMPs

(To be attached by the contractor prior to certification)

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SECTION 01500

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SECTION 01500

TEMPORARY CONSTRUCTION FACILITIES

PART 1 GENERAL
1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

DEPARTMENT OF COMMERCE (DOC)

DOC PS 1	(1993) Construction and Industrial Plywood
DOC PS 20	(1970) American Softwood Lumber Standard.

FEDERAL SPECIFICATIONS (FS)

FS TT-E-2784	(Rev A) Enamel (Acrylic-Emulsion, Exterior)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z535.1	(1991) Safety Color Code

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM F 547	(1977; R 1990) Definitions of Terms Relating to Nails for Use with Wood and Wood-Base Materials

U.S. ARMY CORPS OF ENGINEERS

EM 385-1-1	Safety and Health Requirements Manual (3 September 1996).

WEST COAST LUMBER INSPECTION BUREAU (WCLIB)

WCLIB 16	(1970; Rev 1983) Standard Grading and Dressing Rules for Douglas Fir, Western Hemlock, Western Red Cedar, White Fir, Sitka Spruce Lumber

WESTERN WOOD PRODUCTS ASSOCIATION (WWPA)

WWPA-01	(1991; Supple No. 1) Western Lumber Grading Rules 91

1.2 GENERAL REQUIREMENTS

1.2.1 Site Plan

The Contractor shall prepare a site plan indicating the proposed location and dimensions of any area to be fenced and used by the Contractor, the number of trailers to be used, avenues of ingress/egress to the fenced area and details of the fence installation. Any areas which may have to be graveled to prevent the tracking of mud shall also be identified. The Contractor shall also indicate if the use of a supplemental or other staging area is desired. The site plan shall also include the locations of haul roads within the project limits, and the traffic control plan.

1.2.2 Identification of Employees

The Contractor shall be responsible for furnishing to each employee and for requiring each employee engaged on the work to display identification as approved and directed by the Contracting Officer. Prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon release of any employee. When required, the Contractor shall obtain and provide fingerprints of persons employed on the project. Contractor and subcontractor personnel shall wear identifying markings on hard hats clearly identifying the company for whom the employee works.

1.2.3 Employee Parking

Contractor employees shall park privately owned vehicles in an area designated by the Contracting Officer. This area will be within reasonable walking distance of the construction site. Contractor employee parking shall not interfere with existing and established parking requirements.

1.3 BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.3.1 Bulletin Board

Immediately upon beginning of work, the Contractor shall provide a weatherproof glass-covered bulletin board not less than 915 by 1220 mm (36 by 48 inches) in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Contracting Officer. The bulletin board shall be located at the project site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer. Legible copies of the aforementioned data shall be displayed until work is completed. Upon completion of work the bulletin board shall be removed by and remain the property of the Contractor.

1.3.2 Project and Safety Signs

(A) General:

The Contractor shall construct and erect project, safety, auxiliary, information, and hard hat signs at locations designated by the Contracting Officer. The signs shall conform to the requirements of the drawings

attached at the end of this section. The signs shall be erected as soon as possible and within 15 days after date of commencement of work under this contract.

(B) Number of Signs:

The Contractor shall furnish the following signs:

Standard sign for Levee and Channel

Projects	1	
Hard Hat Signs	5	at each site while construction is in progress
Auxiliary Sign	2	
Information Sign	1	
Safety Sign	1	

(C) Materials:

(1) Plywood: Exterior.

(2) Bolts, nuts, and nails shall be galvanized, and type, and size best suited for intended for use.

(3) Paint: Exterior. Color of signs and lettering shall be as indicated on the attached drawing. Hard hat signs shall be painted as indicated on the attached drawing.

(4) Decals: Corps of Engineers castle decal and the hard hat decal called for on the signs will be furnished by the Government.

(D) Construction:

(1) Signs shall be constructed as detailed on attached drawings.

(2) All lettering shall be sized as indicated.

(E) Maintenance and Disposal:

The Contractor shall maintain the signs in good condition throughout the life of the project. Signs shall remain the property of the Contractor and upon completion of the project they shall be removed from the site.

1.4 PROTECTION AND MAINTENANCE OF TRAFFIC

During construction the Contractor shall provide access and temporary relocated roads as necessary to maintain traffic. The Contractor shall maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the State and local authorities having jurisdiction. The

traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations.

1.4.1 Haul Roads

The Contractor shall, at its own expense, construct access and haul roads necessary for proper prosecution of the work under this contract. Haul roads shall be constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided. The Contractor shall provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control, although optional, shall be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval by the Contracting Officer. Lighting shall be adequate to assure full and clear visibility for full width of haul road and work areas during any night work operations. Upon completion of the work, haul roads designated by the Contracting Officer shall be removed.

1.4.2 Barricades

The Contractor shall erect and maintain temporary barricades to limit public access to hazardous areas. Such barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Barricades shall be securely placed, clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

1.5 CONTRACTOR'S TEMPORARY FACILITIES

1.5.1 Administrative Field Offices

The Contractor shall provide and maintain administrative field office facilities within the construction area at the designated site. Government office and warehouse facilities will not be available to the Contractor's personnel.

1.5.2 Storage Area

The Contractor shall construct a temporary 1.8 meter (6 foot) high chain link fence around trailers and materials. The fence shall include plastic strip inserts, colored green, so that visibility through the fence is obstructed. Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Trailers, materials, or equipment shall not be placed or stored outside the fenced area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Contracting Officer away from the vicinity of the construction site. Trailers, equipment, or materials shall not be open to public view with the exception of those items which are in support of ongoing work on any given

day. Materials shall not be stockpiled outside the fence in preparation for the next day's work. At the end of each work day mobile equipment, such as tractors, wheeled lifting equipment, cranes, trucks, and like equipment, shall be parked within the fenced area.

1.5.3 Appearance of Trailers

Trailers utilized by the Contractor for administrative or material storage purposes shall present a clean and neat exterior appearance and shall be in a state of good repair. Trailers which, in the opinion of the Contracting Officer, require exterior painting or maintenance will not be allowed on the project site.

1.5.4 Maintenance of Storage Area

Fencing shall be kept in a state of good repair and proper alignment. Should the Contractor elect to traverse with construction equipment or other vehicles grassed or unpaved areas which are not established roadways, such areas shall be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways; gravel gradation shall be at the Contractor's discretion. Grass located within the boundaries of the construction site shall be mowed for the duration of the project. Grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers shall be edged or trimmed neatly.

1.5.5 Security Provisions

Adequate outside security lighting shall be provided at the Contractor's temporary facilities. The Contractor shall be responsible for the security of its own equipment and materials.

1.6 GOVERNMENT FIELD OFFICE

1.6.1 Resident Engineer's Office

The Contractor shall provide the Government Resident Engineer with an office, approximately 19 square meters (200 square feet) in floor area, located where directed and providing space heat, electric light and power, drinking water, a minimum of three phone lines, and toilet facilities consisting of one lavatory and one water closet complete with connections to water and sewer mains. A mail slot in the door or a lockable mail box mounted on the surface of the door shall be provided. At completion of the project, the office shall remain the property of the Contractor and shall be removed from the site. Utilities shall be connected and disconnected in accordance with local codes and to the satisfaction of the Contracting Officer.

1.6.2 Trailer-Type Mobile Office

The Contractor may, at its option, furnish and maintain a trailer-type mobile office acceptable to the Contracting Officer and providing as a minimum the facilities specified above. The trailer shall be securely

anchored to the ground at all four corners to guard against movement during high winds.

1.7 TEMPORARY PROJECT SAFETY FENCING

As soon as practicable, but not later than 15 days after the date established for commencement of work, the Contractor shall furnish and erect temporary project safety fencing at the work site. The safety fencing shall be a high visibility orange colored, high density polyethylene grid or approved equal, a minimum of 1.07 meters (42 inches) high, supported and tightly secured to steel posts located on maximum 3 meters (10 foot) centers, constructed at the approved location. The safety fencing shall be maintained by the Contractor during the life of the contract and, upon completion and acceptance of the work, shall become the property of the Contractor and shall be removed from the work site.

1.8 HOUSEKEEPING AND CLEANUP

Pursuant to the requirements of paragraph, CLEANING UP and paragraph, ACCIDENT PREVENTION, of the CONTRACT CLAUSES, Section 00700, the Contractor shall assign sufficient personnel to insure strict compliance. The Contractor shall submit a detailed written plan for implementation of this requirement. The plan will be presented as part of the preconstruction safety plan and will provide for keeping the total construction site, structures and accessways free of debris and obstructions at all times. Work will not be allowed in those areas that, in the opinion of the Contracting Officer's representative, have unsatisfactory cleanup and housekeeping at the end of the preceding day's normal work shift. At least once each day all areas shall be checked by the Quality Control person of the Prime Contractor and the findings recorded on the Quality Control Daily Report. In addition, the Quality Control person will take immediate action to insure compliance with this requirement. Housekeeping and cleanup shall be assigned by the Contractor to specific personnel. The name(s) of the personnel shall be available at the project site; each person will be supplied with a distinctively marked hard hat, to be worn from the beginning to the end of the project. Construction debris, waste materials, packaging material and the like shall be removed from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways shall be cleaned away. Materials resulting from demolition activities which are salvageable shall be stored within the fenced area described above or at the supplemental storage area. Stored material not in trailers, whether new or salvaged, shall be neatly stacked when stored.

1.9 RESTORATION OF STORAGE AREA

Upon completion of the project and after removal of trailers, materials, and equipment from within the fenced area, the fence shall be removed and will become the property of the Contractor. Areas used by the Contractor for the storage of equipment or material, or other use, shall be restored to the original or better condition. Gravel used to traverse grassed areas shall be removed and the area restored to its original condition, including top soil and seeding as necessary.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

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SECTION 01505

GENERAL REQUIREMENTS

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-- End of Section Table of Contents --

SECTION 01505

GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 SCRAP MATERIAL

Materials specified to be removed and become the property of the Contractor are designated as scrap, and the Contractor, by signing this contract, hereby acknowledges that he has made due allowance for value, if any, of such scrap in the contract price.

1.2 WRITTEN GUARANTEES AND GUARANTOR'S LOCAL REPRESENTATIVE

Prior to completion of the contract, the Contractor shall obtain and furnish to the Contracting Officer's representative written guarantees for all the equipment and/or appliances furnished under the contract. The Contractor shall furnish with each guarantee: The name, address, and telephone number of the guarantor's representative nearest to the location where the equipment and/or appliances are installed, who, upon request of the Using Service's representative, will honor the guarantee during the guaranty period and will provide the services prescribed by the terms of the guarantee.

1.3 PRICING OF CONTRACTOR-FURNISHED PROPERTY

At the request of the Contracting Officer, the Contractor shall promptly furnish and shall cause any subcontractors to furnish, in like manner, unit prices and descriptive data required by the Government for property record purposes of fixtures and equipment furnished and installed by the Contractor.

1.4 TEMPORARY ELECTRIC WIRING

(A) Temporary Power and Lighting:

The Contractor shall provide construction power facilities in accordance with the safety requirements of the National Electrical Code NFPA No. 70 and the SAFETY AND HEALTH REQUIREMENTS MANUAL EM 385-1-1. The Contractor, or his delegated subcontractor, shall enforce all the safety requirements of electrical extensions for the work of all subcontractors. All work shall be accomplished by skilled electrical tradesmen in a workmanlike manner, as approved by the Contracting Officer.

(B) Construction Equipment:

In addition to the requirements of EM 385-1-1, SAFETY AND HEALTH REQUIREMENTS MANUAL, all temporary wiring conductors installed for operation of construction tools and equipment shall be either Type TW or THW contained in metal raceways, or may be multiconductor cord. Temporary wiring shall be secured above the ground or floor in a workmanlike manner

and shall not present an obstacle to persons or equipment. Open wiring may only be used outside of buildings, and then only in strict accordance with the provisions of the National Electrical Code.

(C) Circuit Protection:

In addition to the present requirements in EM 385-1-1 and the National Electrical Code, all 15 and 20-ampere receptacle outlets used for obtaining power during construction shall have ground fault circuit interrupters (GFCI) for personnel protection. Block and brick saws shall also be equipped with GFCI. The Contracting Officer may allow an exception to this requirement for circuits for concrete vibrators or circuits operating at other than 60 Hertz normal (in both cases an assured grounding program as described in the National Electrical Code, except utilizing the daily inspection frequency of the grounding means of such equipment, may be permitted). The assured grounding program will not be permitted as a substitute for usage of GFCI'S except as described above. All generator-powered 15- and 20-ampere, 60 Hertz receptacle outlets shall have GFCI'S, and shall be properly grounded. A testing means shall be provided which will impose a measured fault of 5 milliamperes, plus or minus 1 milliamperes, and result in tripping the GFCI unit.

1.5 UTILITIES

It is anticipated that pole lines, signs, pipelines and private improvements that would interfere with or are to be replaced by new construction will be removed to new locations by the owners (except as noted otherwise) in advance of construction operations. The Contractor shall notify the Contracting Officer at least 30 days in advance of the date on which work will be started requiring the removal of such utilities or private improvements. Care shall be taken to preserve and protect any such improvements from injury or damage during construction operations. The Contractor shall assume full responsibility for reimbursing the owners for any damage to their properties, utilities, or improvements, or interference with their services caused through his operations. Should such damage be found to have been caused without the Contractor's fault or negligence an equitable adjustment in the amount due under the contract will be made under the applicable CONTRACT CLAUSES, Section 00700.

1.6 GENERAL SAFETY REQUIREMENTS

(A) General:

The Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, (see Contract Clauses, Section 00700, ACCIDENT PREVENTION) and the Occupational Safety and Health Act (OSHA) Standards for Construction (Title 29, Code of Federal Regulations Part 1926 as revised from time to time); General Industry Standards (Title 29, Code of Federal Regulations Part 1910 as revised from time to time); and the National Fire Protection Association Codes are applicable to this contract. In case of conflict the most stringent requirement of the standards is applicable.

(B) The Prime Contractor's superintendent

The Prime Contractor's superintendent shall take an active role in enforcing the safety requirements by participation in safety conferences, hazard analysis (see below), tool box meetings, walk-through inspections, correction of violations, etc., and including that of the subcontractor's work.

(C) Job Hazard Analysis:

Based on the construction schedule, the Contractor shall submit a job hazard analysis of each major phase of work prior to entering that phase of activity. The analysis shall include major or high risk hazards, as well as commonly recurring deficiencies that might possibly be encountered for that operation, and shall identify proposed methods and techniques of accomplishing each phase in a safe manner. The Prime Contractor's superintendent shall take active participation in the Job Hazard Analysis, including the subcontractors' work. Prior to start of actual work a meeting shall be held with Prime Contractor, Government, and affected subcontractor to review the Job Hazard Analysis. In addition, job site meetings shall be held to indoctrinate foreman and workers on details of this analysis.

(D) Violations:

If recurring violations and/or gross violation indicate that the safety performance is unsatisfactory, corrective action shall be taken as directed, and at the discretion of the Contracting Officer the retention or some part thereof will be withheld from the progress payment until corrective action has been completed.

(E) Fire Prevention:

Cutting or welding will be permitted only in areas that are or have been made fire safe. Where possible, all combustibles shall be located at least 35 feet horizontally from the work site. Where such location is impracticable, combustibles shall be protected with fire blankets and/or protective welding screens to prevent slag from running out of the work area. Edges of covers at the floor shall be tight to prevent sparks from going under them. This precaution is also important at overlaps where several covers are used to protect a large pile. Other fire prevention precautions shall be in accordance with the latest National Fire Codes.

(F) Recordkeeping/Reporting Requirements:

On all contract operations, the Prime Contractor shall be responsible for recording and reporting all accident exposure and experience incident work. (This includes exposure and experience of the prime contractor and his/her sub-contractor(s)). As a minimum these records shall include exposure work-hours and a log of occupational injuries and illnesses. (OSHA Form 200 or state equivalent as prescribed by 29 CFR 1904.5) Reference EM 385-1-1, 01.D.04.

(G) Accident Reporting:

In addition to the requirements for reporting accidents in accordance

with EM 385-1-1, Section 1, the Prime Contractor will submit at the 50% point and 100% of project completion, a written summary of worker's compensation claims filed by workers on the project. The report will include all subcontractors. The main report covering the Prime Contractor claims will be certified as "correct and true" by the Contractor's compensation insurance carrier. The same certification will be required for subcontractor reports.

1.7 PERMITS

(A) General:

Reference is made to the article of the contract entitled "Permits and Responsibilities," which obligates the Contractor to obtain all required licenses and permits. Reference is also made to Section 01354 ENVIRONMENTAL PROTECTION FOR CIVIL WORKS.

(B) NPDES Permit:

The Contractor shall comply with the National Pollutant Discharge Elimination System (NPDES) requirements consisting of the SWPPP and the monitoring plan, which have been prepared by the Government. The Government will obtain the Notice of Intent (NOI) and pay for the NPDES permit. The Contracting Officer will provide the Notice of Termination (NOT), with photos, after the project is completed. The Contractor shall diligently cooperate with the Government to meet Permit requirements. See Section 01354 ENVIRONMENTAL PROTECTION FOR CIVIL WORKS.

1.8 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

(A) This provision specifies the procedure for the determination of time extensions for unusually severe weather in accordance with the CONTRACT CLAUSE, Section 00700, entitled "DEFAULT (FIXED-PRICE CONSTRUCTION)". In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

(1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

(2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

(B) The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY
WORK DAYS BASED ON (5) DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
(07)	(05)	(05)	(04)	(01)	(01)	(00)	(00)	(01)	(02)	(05)	(07)

(C) Upon acknowledgement of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day.
(ER 415-1-15, 31 OCT 89)

1.9 EQUIPMENT DATA FORM

In conjunction with paragraph, EFARS 52.231-5000 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE, in Section 00800, the Contractor shall furnish SPK Form 450 for all necessary equipment to perform work requiring adjustment of contract price and shall submit these forms with the modification proposals. A sample form is at the end of this section.

1.10 SOIL DENSITY TEST (USING METERS CONTAINING RADIOACTIVE MATERIALS)

(A) Nuclear methods are not acceptable for soil and soil-aggregate density tests required by this contract except as stated in DIVISION 2. Testing for official results shall be conducted as specified in DIVISION 2 of this contract. If the Contractor proposes to use meters containing radioactive materials to obtain unofficial results for his own convenience, the Contractor shall adhere to the following requirements:

(B) In accordance with 06.E of EM 385-1-1, Safety and Health Requirements Manual, the Contractor shall obtain a service permit to use, store, operate, or handle a radiation producing machine or radioactive materials. The service permit shall be obtained through the Contracting Officer's Representative. The Contractor should notify the Contracting Officer during the pre-work conference if a radiation producing device will be utilized in order to determine the permit application requirements, and allow a lead time of 45 days for obtaining a permit.

(C) The Contractor is responsible for providing a copy of any Nuclear Regulatory Commission (NRC) licenses per the Code of Federal Regulations 10 CFR "Energy" for all radioactive sources brought onto the site by the Contractor and/or subcontractors. These licenses shall be provided to the Contracting Officer's Representative, before the radioactive sources is allowed on the site.

1.11 BID ITEM OVERRUN

Throughout the contract, (at a minimum, every two weeks) the Contractor shall be responsible to monitor placement or installation of unit price items (if any) with respect to the original estimated quantities shown in the contract. If placement or installation indicates a possible overrun with respect to the original estimated quantities shown in the contract,

the Contractor shall immediately provide written notification to the Contracting Officer with revised total estimated quantities.

1.12 PAYMENT

No separate payment will be made for the work covered under this section and all costs in connection therewith will be considered a subsidiary obligation of the Contractor.

1.13 NON CONTRACT WORK

The Contractor and/or his subcontractors shall not perform any work or erect any structure for third parties, landowners or otherwise, within the limits of the rights-of-way without prior approval of the Contracting Officer.

1.14 DAMAGE TO ROADS

The Contractor shall document, on video and photographs, the pre-project condition of the project access road (Steblow Drive) as well as all existing roads within the project right-of-way. A copy of this video will be made available to the Contracting Officer. The Contractor shall preserve and protect all existing private or project access or right-of-way roads and existing landscaped areas. The Contractor shall conform to all applicable load requirements for roads. At the completion of work and prior to the Contractor leaving the project, he shall restore to pre-project conditions all such roads. Repairs shall include replacement of base rock and/or surface treatment as required.

1.15 ENVIRONMENTAL LITIGATION

(A) If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Contracting Officer, at the request of the Contractor, shall determine whether the order is due in any part to the acts or omissions of the Contractor or a subcontractor at any tier not required by the terms of this contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a subcontractor at any tier other than as required by the terms of this contract, such suspension, delay, or interruption shall be considered as if ordered by the Contracting Officer in the administration of this contract under the terms of the SUSPENSION OF WORK clause of this contract, see Section 00700. The period of such suspension, delay or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provisions thereof.

(B) The term "environmental litigations", as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

1.16 SPECIAL CONSTRUCTION PROCEDURES

(A) Adverse Conditions, Tidal Action in Napa River:

The influence of tides on the water surface elevation of the Napa River is significant within the limits of this Contract. The tides are mixed diurnal, meaning that they are characterized by two daily highs and lows in each tidal cycle - a period of 24 hours and 50 minutes. The table below shows the tidal datums in the vicinity of the contract.

Tidal Datums - Project Reach (NOAA 1994)

	Elevation, ft (NGVD)
Mean Higher High Water (MHHW)	3.76
Mean High Water (MHW)	3.24
Mean Tide Level (MTL)	0.67
Mean Low Water (MLW)	-1.9
Mean Lower Low Water (MLLW)	-2.84

The data in this table was obtained from the National Oceanic and Atmospheric Administration (NOAA). The tide data is based on interpolations between the two nearest NOAA tidal gauges - Napa (3.5 miles upstream) and Brazos Drawbridge (3.5 miles downstream). Daily tides can be higher or lower than the mean tide elevations shown in the table. On average, 50% of the daily higher high water elevations are expected to exceed the MHHW elevation of 3.76 feet (NGVD). Approximately 10% of the Higher High Water (HHW) levels reach 4.7 ft (NGVD), and approximately 1% to 3% of the HHW levels are over 5 ft (NGVD). There may be times within the duration of the contract when the high tide elevation exceeds the design grade of the floodplain terrace. Predictions of future tides are available from the NOAA.

The Contractor shall plan the work in this contract accounting for the tidal action in the Napa River, and bid the work accordingly. It is the Contractor's responsibility to monitor the tides throughout the duration of the contract.

(B) Sequence of Construction:

(1) All required excavation (including the floodplain and marshplain terraces, and excavation of the tidal sloughs), other than the breach in Kennedy Park, shall be completed no later than 1 October. Construction of the training dike, and training dike road surface shall also be completed by 1 October. This is to eliminate the possibility of flood waters inundating the surrounding area due to the lowering of the existing river banks. Final grading of the disposal site shall be completed no later than 15 October. All work required for the native grass seeding, disposal site seeding, and other seeding shall be completed no later than the dates required in section02920 GRASS SEEDING.

(2) The breach in Kennedy Park shall be excavated following the completion and acceptance by the Contracting Officer of all other contract work. This is necessary because the excavation of the breaches will open a portion of the project area up to daily tidal influence, and make access to

some of the project difficult.

(3) It is highly recommended that the excavation work is phased to limit the risk of a high tide overflowing the lowered river banks for as long as possible during construction. If a high tide were to overflow the lowered river banks prior to completion of construction, it is expected to cause damage to the grading of the floodplain terrace, and inundate an unknown amount of the low ground behind the river banks. The contractor is responsible for monitoring the tides, and planning work accordingly.

(4) Due to environmental restrictions, "in-water" work activities are prohibited from October 15 to June 15 of each year. The potential for extension of this work window exists if surveys (performed by others) show that certain species of concern are not present in the work area. Permission to deviate from this work window must be received in writing from the Contracting Officer. See Section 01354 ENVIRONMENTAL PROTECTION FOR CIVIL WORKS, for further information.

(C) Contractor's Construction Activity

For weekdays Monday through Friday, contractor's construction activities shall be limited to daylight hours but not earlier than 6:30am and not later than 8:00pm. On Saturday, contractor's construction activities shall be limited to daylight hours but not earlier than 7:00am and not later than 8:00pm. On Sunday, contractor's activities shall be limited to daylight hours but not earlier than 8:00am and not later than 6:00pm. Work hours shall not vary unless otherwise approved in writing by the Contracting Officer.

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SECTION 02215

GEOTEXTILES USED AS FILTERS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 123	(1993) Standard Terminology of Terms Related to Textiles
ASTM D 3786	(1987) Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics - Diaphragm Bursting Strength Tester Method
ASTM D 4355	(1992) Deterioration of Geotextile from Exposure to Ultraviolet light and Water (Xenon-Arc Type Apparatus)
ASTM D 4491	(1992) Water Permeability of Geotextiles By Permittivity
ASTM D 4533	(1991) Trapezoid Tearing Strength of Geotextile
ASTM D 4751	(1993) Determining the Apparent Opening Size of a Geotextile
ASTM D 4833	(1988) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products

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1.2 MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made for geotextile. All costs for obtaining, testing, and placing geotextile in accordance with this specification shall be considered incidental to the bid item "Pedestrian Bridge Abutments".

1.3 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTAL PROCEDURES:

SD-13 Certificates

Geotextile; .

The Contractor shall furnish the Contracting Officer, in duplicate, a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the geotextile. The mill certificate or affidavit shall attest that the geotextile meets the chemical, physical and manufacturing requirements stated in this specification.

1.4 SHIPMENT, HANDLING, AND STORAGE

1.4.1 Shipment

Only approved geotextile rolls shall be delivered to the project site. All geotextile shall be labeled, shipped, stored, and handled in accordance with ASTM D 4873 and as specified herein. Each roll shall be wrapped in an opaque and waterproof layer of plastic during shipment and storage. Each roll shall be labeled with the manufacturer name, geotextile type, lot number, roll number, and roll dimensions (length, width, gross weight).

1.4.2 Handling

No hooks, tongs, or other sharp instruments shall be used for handling geotextile. Geotextile shall not be dragged along the ground. Any geotextile determine to be damaged as a result of poor handling shall be removed from the site and replaced, at no additional cost to the Government, by additional geotextile meeting requirements of this specification.

1.4.3 Storage

During all periods of shipment and storage, the geotextile shall be protected from direct sunlight, ultra-violet rays, temperatures greater than 140 degrees F (or less if recommended by the manufacturer), mud, dirt, dust and debris. Geotextile shall be stored in areas where water cannot accumulate, elevated off the ground, and protected from conditions that will affect the properties or performance of the geotextile.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Geotextile

2.1.1.1 General

The geotextile shall be a woven pervious sheet of plastic yarn as defined by ASTM D 123. The geotextile shall equal or exceed the minimum average roll values listed in TABLE 1, MINIMUM PHYSICAL REQUIREMENTS FOR DRAINAGE GEOTEXTILE. Strength values indicated in the table are for the weaker principal direction.

TABLE 1

MINIMUM PHYSICAL REQUIREMENTS FOR DRAINAGE GEOTEXTILE

PROPERTY	UNITS	ACCEPTABLE VALUES	TEST METHOD
GRAB STRENGTH	lb	200	ASTM D 4632
BREAKING ELONGATION	%	15	ASTM D 4632
PUNCTURE	lb	130	ASTM D 4833
BURST STRENGTH	psi	500	ASTM D 3786
TRAPEZOID TEAR	lb	25	ASTM D 4533
PERMEABILITY	cm/sec	Minimum 0.02	ASTM D 4491
APPARENT OPENING SIZE	U.S. SIEVE	>= #70 AND <= #100	ASTM D 4751
PERCENT OPEN AREA	%	Minimum 10	Percentage Summation of Open Area to Total Area of Geotextile Fabric
ULTRAVIOLET DEGRADATION	%	70 AT 500 Hrs	ASTM D 4355

2.1.1.2 Geotextile Fiber

Fibers used in the manufacturing of the geotextile shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of polyolefins, polyesters, or polamides. Stabilizers and/or inhibitors shall be added to the base polymer if necessary to make the filaments resistant to deterioration caused by ultraviolet light and heat exposure. Reclaimed or recycled fibers or polymer shall not be added to the formulation. Geotextile shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other, including the edges. The edges of the geotextile shall be finished to prevent the outer fiber from pulling away from the geotextile.

2.1.2 [Enter Appropriate Subpart Title Here]

2.2 INSPECTIONS, VERIFICATIONS, AND TESTING

2.2.1 Manufacturing and Sampling

Geotextiles and factory seams shall meet the requirements specified in TABLE 1, MINIMUM PHYSICAL REQUIREMENTS FOR DRAINAGE GEOTEXTILE.

PART 3 EXECUTION

3.1 INSTALLATION OF THE GEOTEXTILE

3.1.1 General

The geotextile shall be placed in the manner and at the locations shown on the drawings. At the time of installation, the geotextile shall be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation or storage.

3.1.2 Placement

The geotextile shall be placed as shown on the drawings and laid smooth and free of tension, stress, folds, wrinkles, or creases. The strips shall be placed to provide a minimum width of 12 inches of overlap for each joint. The placement procedure requires that the geotextile wrap the bottom of the filter material and overlap the weep hole in the wall by at least 1 foot. Furthermore the geotextile shall wrap around the sides and top of the filter material by at least 1 foot. Temporary pinning of the geotextile to help hold it in place until the filter material is placed shall be allowed. The temporary pins shall be removed as the granular filter material is placed to relieve high tensile stress which may occur during placement of material on the geotextile. Trimming shall be performed in such a manner that the geotextile shall not be damaged in any way.

3.2 PROTECTION

The geotextile shall be protected at all times during construction from contamination by surface runoff and any geotextile so contaminated shall be removed and replaced with uncontaminated geotextile. Any damage to the geotextile during its installation or during placement of granular filter materials shall be replaced by the Contractor at no cost to the Government. The work shall be scheduled so that the covering of the geotextile with a layer of the specified material is accomplished within 3 calendar days after placement of the geotextile. Failure to comply shall require replacement of geotextile. The geotextile shall be protected from damage prior to and during the placement of backfill and filter material. Before placement of backfill and filter material, the Contractor shall demonstrate that the placement technique will not cause damage to the geotextile. In no case shall any type of equipment be allowed on the unprotected geotextile.

3.3 OVERLAPPING AND SEAMING

3.3.1 Overlapping

The overlap of geotextile rolls shall be 12 inches. Appropriate measures

will be taken to insure required overlap exists after placement of backfill and granular filter material.

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SECTION 02230

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SECTION 02230

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Clearing

Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees, other vegetation and obstructions designated for removal, including down timber, snags, brush, rubbish, fences, stone, bank protection, abandoned structures, pavement and base course, gravel trails, utilities, and other debris occurring in the areas to be cleared. Vegetation to be removed shall consist of all heavy growth of crops, grass and weeds.

1.1.2 Grubbing

Grubbing shall consist of the removal and disposal of stumps, roots larger than 2 inches in diameter, matted roots, old paving and other objectionable matter from the designated grubbing areas. All tap roots, lateral roots, or other projection over 1 1/2 inches in diameter within the areas to recieve fill or other structures shall be removed to a depth of three feet below the natural surface of the ground.

1.1.3 Limits of Clearing and Grubbing

Except as otherwise specified, and/or indicated areas to be cleared and grubbed will be limited to three feet beyond actual excavation area, areas on which fills and/or structures are to be placed, or areas if utilized by the Contractor for staging or stockpiling operations as necessary. The removal of trees, shrubs, turf, and other vegetation outside of the permanent right-of-way lines will not be allowed.

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-18 Records

Material Disposal Plan; .

The Contractor shall submit a plan designating where material generated from the clearing and grubbing operation is to be disposed of. Written permission to dispose of such products on private property shall be filed

with the Contracting Officer.

1.3 MEASUREMENT

1.3.1 Measured Clearing and Grubbing

Clearing and grubbing shall be measured in acres of clearing and grubbing actually performed.

1.4 PAYMENT

1.4.1 Paid Clearing and Grubbing

Payment will be made at the contract unit price for clearing and grubbing, and this price shall constitute full compensation for all labor, equipment, tools, and incidentals necessary to complete the work specified herein.

1.5 ENVIRONMENTAL PROTECTION

All work shall comply with the requirements of Section 01354 ENVIRONMENTAL PROTECTION FOR CIVIL WORKS.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 CLEARING

Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing. Trees designated to be left standing within the cleared areas shall be trimmed of dead branches 1-1/2 inches or more in diameter and shall be trimmed of all branches to the heights indicated or directed. Limbs and branches to be trimmed shall be neatly cut close to the bole of the tree or main branches. Cuts more than 1-1/2 inches in diameter shall be painted with an approved tree-wound paint. Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require. Clearing shall also include the removal and disposal of structures, stone, concrete rubble, pavement, gravel surfaces, utility pipes and other obstructions that obtrude, encroach upon, or otherwise obstruct the work. Existing structures indicated shall be removed to 3 feet below grade. Holes and other hazardous openings created during clearing operations shall be filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.

3.2 GRUBBING

Material to be grubbed, together with logs and other organic or metallic debris not suitable for foundation purposes, shall be removed to a depth of

not less than 18 inches below the original surface level of the ground in areas indicated to be grubbed and in areas indicated as construction areas under this contract, such as areas to be paved. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.

3.3 DISPOSAL OF MATERIALS

3.3.1 Material Disposal

Logs, stumps, roots, brush, rotten wood, stone, concrete rubble, debris from obstructions designated for removal, and other refuse from the clearing and grubbing operations shall become the property of the Contractor and be disposed of off-site in accordance with all Federal, State, and local regulations and codes, , except when otherwise directed in writing. Such directive will state the conditions covering the disposal of such products and will also state the areas in which they may be placed. The contractor shall make every effort possible to keep concrete rubble and rock material removed from the river banks from being disposed in a landfill. This includes, but is not limited to, hauling the material to a recycler or providing the material to an entity that will not be disposing of it in a landfill. Burning of refuse at the project site shall not be permitted.

3.4 DUST CONTROL

The amount of dust resulting from clearing and grubbing shall be controlled to prevent the spread of dust to occupied portions of the construction site and to avoid creation of a nuisance in the surrounding area. Water sprinkling shall be utilized to control dust. The contractor shall have sufficient equipment and personnel to accomplish sprinkling. Trucks hauling materials shall be covered or the loads dampened to prevent visible dust emissions during hauling or dumping.

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SECTION 02290

STONE PROTECTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 88-83	Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
ASTM C 127-84	Specific Gravity and Absorption of Coarse Aggregate.
ASTM C 131-81	Resistance to Abrasion of Small Size Coarse Aggregate by Use of the Los Angeles Machine.
ASTM C 136-84a	Sieve or Screen Analysis of Fine and Coarse Aggregates.
ASTM C 535-81	Resistance to Abrasion of Large Size Coarse Aggregate by Use of the Los Angeles Machine.
ASTM D 1141-75	Substitute Ocean Water.

1.2 GENERAL

Work specified in this section consists of furnishing all plant, labor, equipment, materials, supplies and incidentals required for producing, transporting, and placing stone protection and riprap.

1.3 MEASUREMENT AND PAYMENT

1.3.1 Stone Protection and Riprap:

1.3.1.1 Measurement

No separate measurement for payment shall be made for stone protection and bedding material. All materials and work covered in this section shall be considered incidental to the bid item "Pedestrian Bridge Abutments".

1.3.1.2 Payment

No separate payment shall be made for stone protection and bedding material. Payment for all costs of furnishing, hauling, and placing of the stoneprotection and bedding material as specified herein shall be included in the item "Pedestrian Bridge Abutments".

1.4 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are For Information Only. The following shall be submitted in accordance with Section 01330:

SD-01 Data

Source of Material; G.
Source of Material; Name and location of quarry, exploratory data and compliance test reports, and service roads.

SD-09 Reports

Reports; G.
Quality compliance testing required. Gradation Tests; Gradation test results shall be performed in accordance with paragraph 2.1.4.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Source and Material Approval

The Contractor shall make all arrangements, pay all royalties, and secure all permits for the procurement, furnishing and transporting of materials. The sources from which the Contractor proposes to obtain the material shall be selected and a sample submitted a minimum of 30 days in advance of the time when the material will be required in the work. Stone from a proposed source where exploratory investigations and compliance test reports or satisfactory service records from the last five yearsare not available, shall be tested by the contractor for quality compliance. All test samples (500 pounds minimum for stone protection) shall be representative of the rock source and shall be obtained by the Contractor under the supervision of the Contracting Officer A list of sources from which acceptable stone protection materials have been obtained in the past is available for informational purposes in the Geotechnical Branch of the Sacrament District, Corps of Engineers. Sources listed may no longer be available due to depletion or may not be acceptable because of changes in the material. The Contractor shall vary the quarrying, processing, loading and placing operations to secure the type and quality of stone protection specified. If the stone being furnished by the Contractor does not fully meet all the requirements of these specifications, the Contractor shall

furnish at no additional cost to the Government, other stone meeting the requirements of these specifications. Approval of stone from a source shall not be construed as a waiver of the right of the Government to require the Contractor to furnish stone which complies with these specifications. Materials produced from localized areas, zones or strata will be rejected when such materials do not comply with the specifications.

2.1.2 Quality Compliance

Test results and service records may be used to determine the acceptability of the stone protection materials. In the event compliance test reports and/or service records from the last five years are not available, the material shall be subjected to the tests outlined in these specifications to determine its acceptability for use in the work. Before a proposed new source of stone will be considered for sampling and testing, one of the following criteria must be met:

a. A sufficiently developed quarry operation to demonstrate that an adequate quantity of stone is available to fulfill the contract requirements; or,

b. An exposed face plus sufficient explorations (results of which are made available to the Government) to demonstrate that an adequate quantity of stone is available to fulfill the contract requirements.

2.1.3 Quality Compliance Tests for Stone Protection

Stone shall meet the following test requirements:

Test	Test Method	Requirement
Specific Gravity (Bulk SSD)	ASTM C 127	2.50 Minimum
Absorption	ASTM C 127	2.0% Maximum
Wetting and Drying	SPD Test (1)	Minor Disintegration
Magnesium Sulfate	ASTM C 88 (2)	15% max. Loss
Abrasion Loss	ASTM C 535	50% max. Loss

In addition to the above tests, the stone shall be subjected to a petrographic and x-ray diffraction analysis. The stone must not contain any swelling type clay (illite or montmorillonite).

NOTE: (1): Test procedure wetting-and-drying tests: The initial step of the test is the careful examination of the entire sample and the selection of representative test specimens. The piece should be large enough to produce two cut slabs, 1 inch thick (1/4 inch) with a minimum surface area of 30 square inches on one side. Two chunks approximately three by four inches are also chosen. The slabs and chunks are carefully examined under a low power microscope and all visible surface features are noted and recorded. The specimens are then oven dried at 140 degrees Fahrenheit, for eight hours, cooled and weighed to the nearest tenth of a gram. The test specimens are photographed to show all surface features before the test. The chunks and slabs are then subjected to fifteen cycles of wetting and

drying. One slab and one chunk are soaked in fresh tap water, and the other slab and chunk are soaked in salt water prepared in accordance with ASTM D 1141. Each cycle consists of soaking for sixteen hours at room temperature and then drying in an oven for eight hours at 140 degrees Fahrenheit. After each cycle the specimens are examined with the low-power microscope to check for opening or movement of fractures, flaking along edges, swelling of clays, softening of rock surface, heaving of micaceous minerals, breakdown of matrix material and any other evidence of weakness developing in the rock. The cycle in which any of these actions occurs is recorded. After fifteen cycles, the slabs and chunks are again carefully examined and changes in the rocks are noted and recorded. The test specimens together with all flakes or particles which come off during the test are oven dried, weighed and photographed. Minor disintegration is considered allowable. Weakening and loss of individual surface particles is permissible unless bond of the surface grains softens and causes general disintegration of the surface material.

NOTE: (2): The test shall be made of 50 particles each weighing 100 grams (± 20 grams), in lieu of the gradation given in ASTM C 88.

NOTE: (4): Sandstones which have a loss greater than the specified limit will be accepted if the Contractor demonstrates that the rock has a satisfactory service record.

2.1.4 Gradation Sampling and Testing for Stone Protection

Testing shall be the responsiblity of the Contractor and shall be performed at no additional cost to the Government. Sampling and testing shall be performed by an approved commercial testing laboratory or by an approved Contractor's onsite laboratory meeting the requirements of SECTION 01451 CONTRACTOR QUALITY CONTROL. The Government reserves the right to perform check tests and to use the Contractor's sampling and testing facilities to make the tests. Each sample shall consist of not less than 1000 pounds of materials and shall be selected at random from the production run. One gradation test is required at the beginning of production prior to delivery of stone to the project . All sampling and gradation tests performed by the Contractor shall be under the supervision of the Contracting Officer.

2.1.5 Gradation Sampling and Testing for Bedding Material

Testing shall be the responsiblity of the Contractor and shall be performed at no additional cost to the Government. Sampling and testing shall be performed by an approved commercial testing laboratory or by an approved Contractor's onsite laboratory meeting the requirements of SECTION 01451 CONTRACTOR QUALITY CONTROL. The Government reserves the right to perform check tests and to use the Contractor's sampling and testing facilities to make the tests. Each sample shall consist of not less than 15 pounds of materials and shall be selected at random from the production run. One gradation test is required at the beginning of production prior to delivery of bedding material to the project. All sampling and gradation tests performed by the Contractor shall be under the supervision of the Contracting Officer.

2.1.6 Gradation

2.1.6.1 General:
All points on each individual grading curve shall be between the boundary limits as defined by a smooth curve drawn through specified grading limits plotted on a mechanical analysis diagram. The individual grading curves shall not exhibit abrupt change in slope denoting skip grading or scalping of certain sizes. Specified grading of all material shall be met both at the source and as delivered to the project. In addition, material not meeting the required grading due to segregation or degradation during placement shall be rejected. If test results show that the stone does not meet the required grading, the hauling operation will be stopped immediately and will not resume until rock processing procedures are adjusted and a gradation test is completed showing gradation requirements are met. All gradation tests are at the expense of the Contractor.

2.1.6.2 Stone Protection:
Stone protection shall be quarry stone, as specified below. Quarry stone shall be angular in shape. Neither the breadth nor the thickness of any piece of stone shall be less than one-third its length. Quarry stone as placed in any portion of the completed layer shall meet the following gradations:

Gradation for Stone Protection - Quarry Stone

Weight of Pieces (Lbs.)	Percent Smaller by Weight
36	100
10	50-80
5	20-40
2	0-15
1	0-5

2.1.6.3 Bedding Material Gradation

Bedding material shall be composed of tough, durable particles; shall be free from adherent coatings, and be reasonably free from thin, flat, and elongated pieces; shall also contain no organic material or soft friable particles. Bedding material shall consist of clean sand and crushed gravel and cobbles, or crushed stone, and shall lie between the grading limits specified below. At least 50% of the crushed gravel and cobbles shall have two or more fractured faces, and 95 percent or more at least one fractured face.

Gradation for Bedding Material

U.S. Standard Sieve Sizes	Percent passing by Weight
1 inch	100
3/8 inch	50-70
#4	10-35
#10	0-5

Gradation for Bedding Material

2.1.7 Rejected Stone

The Government reserves the right to reject any material of unsuitable quality and/or size distribution as required by these specifications. Any rejected stone shall be promptly removed from the project at no expense to the Government. Any portions of the work covered by these specifications containing rejected stone will be considered incomplete.

PART 3 EXECUTION

3.1 FOUNDATION PREPARATION

3.1.1 Bedding Material

Areas on which stone protection is to be placed shall be cleared and grubbed in accordance with Section 02230 CLEARING AND GRUBBING. The slope shall be trimmed and dressed to conform to cross sections shown on the drawings within an allowable tolerance of minus 0 to plus 3 inches. The Contractor shall provide surveyed cross sections taken before the placement of bedding material. Where areas of the slope are below grade, they shall be brought to grade by filling with soil similar to adjacent material. No additional payment will be made for material thus required. The areas repaired shall be re-surveyed and the cross section notes given to the Contracting Officer for checking prior to the bedding material placement. Immediately prior to placing the bedding material, the prepared base will be inspected by the Contracting Officer and no bedding material shall be placed thereon until that area has been approved by the Contracting Officer.

3.1.2 Stone Protection

Immediately prior to placing the stone, the bedding material base shall be inspected by the Contracting Officer and no material shall be placed thereon until that area has been approved.

3.2 PLACEMENT

3.2.1 Bedding Material

Bedding material will be used within the limits shown on the drawings or as staked in the field. Bedding material placement shall begin at the lowest elevation and work up the slope, be placed in a manner to produce a reasonably well graded mass with the minimum possible percentage of voids, and shall be constructed to the grades indicated or as directed by the Contracting Officer. Bedding material shall be placed to its full course of thickness in one operation and in a manner to avoid displacing the underlying material. Method of placement shall be submitted to the Contracting Officer for approval prior to commencement of placement operations. The Contractor shall maintain the bedding material until accepted and any material displaced by any cause shall be replaced at the

Contractors expense to the lines and grades shown on the drawings. Hand placing, barring, or placing by crane will be required only to the extent necessary to secure the results specified. Placing bedding material by dumping into chutes or by similar methods likely to cause segregation will not be permitted. A tolerance of plus or minus two (2) inches from the indicated slope lines and grades will be allowed in the finished surface. Equipment will not be permitted on the finished surface of the bedding material.

3.2.2 Stone Protection

Stone Protection will be used within the limits shown on the drawings or as staked in the field. Stone protection placement shall begin at the lowest elevation and work up the slope, be placed in a manner to produce a reasonably well graded mass with the minimum possible percentage of voids, and shall be constructed to the grades indicated or as directed by the Contracting Officer. Stone Protection shall be placed to its full course of thickness in one operation and in a manner to avoid displacing the underlying material. Method of placement shall be submitted to the Contracting Officer for approval prior to commencement of placement operations. The use of tractor loaders or other equipment commonly referred to as front-end loaders shall not be permitted in placing stone. Hand placing, barring, or placing by crane will be required only to the extent necessary to secure the results specified. Placing stone protection by dumping or by similar methods likely to cause segregation will not be permitted. A tolerance of plus four (4) or minus three (3) inches from the indicated slope lines and grades will be allowed in the finished surface. Equipment shall not be permitted on the finished surface of the stone protection.

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SECTION 02301

EXCAVATION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 117	(1995) Standard Test Method for Materials Finer than 75-um (No. 200) Sieve in Mineral Aggregate Washing
ASTM C 136	(1996a) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D 698	(1991) Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3))
ASTM D 2487	(1998) Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 4318	(1998) Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

ENGINEERING MANUALS (EM)

EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS

CESPK PAM 415-1-2	Construction Control Manual

1.2 SCOPE

The work covered by this section consists of furnishing all plant, labor, and materials, and incidentals, and performing all operations necessary for stripping of the areas specified herein or indicated on the drawings, and excavation of areas specified herein. Excavation shall include excavation

of riverbanks and floodplain terrace drainage swales and obtaining satisfactory fill material from required project excavation. All work under this section shall comply with the requirements of EM 385-1-1.

1.3 MEASUREMENT

1.3.1 Stripping

Stripping, except for the secondary borrow site (optional item), shall be measured for payment by the cubic yard as determined by the average end area method. The basis of measurement will be a survey of the ground surface after clearing and grubbing, and a second survey of the same area after completion of stripping to the specified depths. Surveyed cross sections shall be utilized for the purpose of quantity measurement and shall be performed at significant breaks in grade except that the maximum distance between cross sections shall not exceed one hundred (100) feet. If the Excavation of Secondary Borrow Site optional item is exercised by the Government, stripping of the secondary borrow site shall be considered incidental to excavation and no separate measurement for payment shall be made.

1.3.2 Floodplain Terrace Excavation

The approximate limits in plan view for the floodplain terrace excavation are shown on the contract drawings. The pre-construction survey as described in paragraph "Pre-Construction Survey" shall be performed to established the horizontal limits for excavation. Excavation for the floodplain terrace shall be measured for payment by the cubic yard as determined by the average end area method. The basis of measurement will be a survey of ground surface with the prescribed limits after clearing and grubbing, and a second survey of the same area after the completion of the excavation. Survey cross sections shall be utilized for the purpose of quantity measurement and shall be performed at significant breaks in grade or horizontal extent of excavation except that the maximum distance between cross sections shall not exceed fifty (50) feet. Yardage excavated beyond the lines, grades and elevations shown on the contract drawing will not be included in measurement for payment.

1.3.3 Marshplain Terrace Excavation

Excavation for the marshplain terrace shall be measured for payment by the cubic yard as determined by the average end area method. The basis of measurement will be a survey of ground surface with the prescribed limits after clearing and grubbing and a second survey of the same area after the completion of the excavation. Survey cross sections shall be utilized for the purpose of quantity measurement and shall be performed at significant breaks in grade except that the maximum distance between cross sections shall not exceed fifty (50) feet. Yardage excavated beyond the lines, grades, and elevations shown on the contract drawings will not be included in measurement for payment.

1.3.4 Floodplain Terrace Drainage Swale Excavation

Excavation for the floodplain terrace drainage swales shall each be

measured for payment, separately, by the cubic yard as determined by the average end area method. The basis of measurement will be a survey of ground surface with the prescribed limits after floodplain terrace excavation and a second survey of the same area after the completion of the drainage swale excavation. Survey cross sections shall be utilized for the purpose of quantity measurement and shall be performed at significant breaks in grade except that the maximum distance between cross sections shall not exceed fifty (50) feet. Yardage excavated beyond the lines, grades and elevations shown on the contract drawings will not be included in the measurement for payment.

1.3.5 Optional Item: Excavation from Secondary Borrow Site

Excavation from the secondary borrow site shall be measured for payment by the cubic yard as determined by the average end area method. The basis of measurement will be a survey of ground surface with the prescribed limits after clearing and grubbing and a second survey of the same area after the completion of the excavation. Survey cross sections shall be utilized for the purpose of quantity measurement and shall be performed at significant breaks in grade except that the maximum distance between cross sections shall not exceed fifty (50) feet. Yardage excavated beyond the lines, grades, and elevations shown on the contract drawings will not be included in measurement for payment.

1.4 PAYMENT

1.4.1 Stripping of Topsoil

Payment for stripping, measured as specified, will be made at the contract unit price per cubic yard for Item, "Stripping of Topsoil". Payment shall constitute full compensation for furnishing all plant, labor, equipment, material, stockpiling, transportation, and all operations necessary to complete the work specified. If the Excavation of Secondary Borrow Site optional item is exercised by the Government, stripping of the secondary borrow site shall be considered incidental to excavation and no separate payment shall be made.

1.4.2 Floodplain Terrace Excavation

Payment for the floodplain terrace excavation, measured as specified, will be made at the contract unit price per cubic yard for Item, "Excavation of Floodplain Terrace". Payment shall constitute full compensation for furnishing all plant, labor, equipment, material, stockpiling, transportation, disposal and all operations necessary to complete the specified work. There will be no separate payment for dewatering or care and diversion of water. All costs of constructing facilities to direct or divert flows from the excavation and all pumping costs, shall be considered incidental to the related excavation. All costs of sorting and removing debris from the excavated riverbank levees shall be considered incidental to the related excavation.

1.4.3 Marshplain Terrace Excavation

Payment for the marshplain terrace excavation, measured as specified, will be made at the contract unit price per cubic yard for Item, "Excavation of Marshplain Terrace". Payment shall constitute full compensation for furnishing all plant, labor, equipment, material, stockpiling, transportation, disposal and all operations necessary to complete the specified work. All costs of constructing facilities to direct or divert flows from the excavation and all pumping costs, shall be considered incidental to the related excavation. All costs of sorting and removing debris from the excavated riverbank levees shall be considered incidental to the related excavation.

1.4.4 Floodplain Terrace Drainage Swale Excavation

Payment for the floodplain terrace drainage swales excavation, measured as specified, will be made at the contract unit price per cubic yard for Item, "Excavation of Floodplain Terrace Drainage Swales (1 through 5)". Payment shall constitute full compensation for furnishing all plant, labor, equipment, material, stockpiling, transportation, disposal and all operations necessary to complete the specified work. All costs of constructing facilities to direct or divert flows from the excavation and all pumping costs, shall be considered incidental to the related excavation.

1.4.5 Tidal Breach Excavation

Payment for the tidal breach will be made at the contract lump-sum price for Item, "Excavation of Tidal Breach". Payment shall constitute full compensation for furnishing all plant, labor, equipment, material, stockpiling, transportation, disposal and all operations necessary to complete the specified work. All costs of constructing facilities to direct or divert flows from the excavation and all pumping costs, shall be considered incidental to the related excavation.

1.4.6 Optional Item: Excavation from Secondary Borrow Site

Payment for excavation from secondary borrow site, measured as specified, will be made at the contract unit price per cubic yard for Item, "Excavation from Secondary Borrow Site". Payment shall constitute full compensation for furnishing all plant, labor, equipment, material, stockpiling, transportation, disposal and all operations necessary to complete the specified work. All costs of stripping topsoil and sorting and removing debris from the excavated soils shall be considered incidental to the related excavation.

1.5 DEFINITIONS

1.5.1 Stripping

Stripping shall consist of the removal and satisfactory disposal of crops, weeds, grass, and other vegetative materials and topsoil to depths specified herein.

1.5.2 Topsoil

At locations specified for topsoil replacement, topsoil shall consist of material obtained from required stripping.

1.5.3 Satisfactory Materials

Satisfactory materials shall be as defined in SECTION 02310, FILLS AND EMBANKMENT.

1.5.4 Unsatisfactory Materials

Unsatisfactory materials shall be as defined in SECTION 02310, FILLS AND EMBANKMENT.

1.5.5 Soil Classification

Materials shall be classified in accordance with ASTM D 2487. Preparation and testing for classification purposes shall be by the wet method. Gradation tests shall be performed with ASTM C 117 and ASTM C 136. Atterberg limits shall be performed in accordance with ASTM D 4318.

1.5.6 Unstable Material

Unstable material is that material that cannot be properly compacted or will not support construction equipment or fill material, due to excess moisture. Potentially unstable materials are fine grained soils with in-place moisture contents near or above the plastic limit as determined by ASTM D 4318, Method A, or 3 or more percent greater than the optimum moisture content as determined by ASTM D 698.

1.5.7 Excavation in the Wet

Excavation in the wet refers to all excavation efforts which yield material which is wet due to tidal intrusion, channelized flow of any type, or ponded or standing water which occurred due to an overbank event. Additionally, excavation in the wet refers to any excavation effort which may cause any measurable increase in the turbidity of a stream, river, channel, or other body of water, regardless of the volume of flow during the work period.

1.5.8 Excavation in the Dry

Excavation in the dry refers to all excavation not meeting the definition for excavation in the wet.

1.6 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01330, SUBMITTAL PROCEDURES:

SD-01 Data

Survey Data; .

Submit copies of survey data used for developing quantities for payment purposes, and compliance surveys. The survey data shall include cross sections before excavation and a second survey of the area after completion of the excavation. The submitted survey data shall include certification that the data is accurate and surveying was performed by a licensed surveyor in the state of California.

Pre-Construction Survey; G.

Submit copies of survey data used for developing the pre-construction survey and developing limits for excavation. The survey data shall include cross sections. The submitted survey data shall include certification that the data is accurate and surveying was performed by a licensed surveyor in the state of California.

Equipment; .

Data for equipment to be used for excavation, hauling, and stockpiling and/or disposal shall be submitted and include weight, size, axle loads, and contact pressures.

SD-08 Statements

Plan of Operation; G.

The Contractor shall submit for approval a Plan of Operation for accomplishing all stripping and excavation.

Material Distribution and Stockpiling Plan; G.

Earth material distribution and stockpile plan that describes where material will be obtained, processed, placed and/or stockpiled for usage. The stockpile plan shall include locations, stockpile heights, slopes, limits, and drainage around the stockpile areas. This information shall be provided within thirty (30) days after the notice to proceed.

Earthwork; .

Procedure and location for disposal of the unused satisfactory material within the disposal site.

SD-09 Reports

Testing; G.

Within 24 hours of conclusion of physical tests, 2 copies of test results, including calibration curves and results of calibration tests.

SD-13 Certificates

Testing Facilities; G.

Qualifications of the commercial testing laboratory or Contractor's testing

facilities.

SD-18 Records

Earthwork Notification; G.

Advance notice on the opening of excavation. Survey Records.

1.7 SUBSURFACE DATA

Subsurface soil exploration logs are shown on the contract drawings. Available subsurface data and subsurface conditions for this site are described in SECTION 02020, SUBSURFACE DATA.

1.8 CLASSIFICATION OF EXCAVATION

No consideration will be given to the excavation methods and nature of the materials encountered, and all excavation will be designated as unclassified.

1.9 BLASTING

Blasting will not be permitted.

1.10 PLAN OF OPERATION

The Contractor shall submit for approval a Plan of Operation for accomplishing all stripping and excavation. The plan shall include but not be limited to the Contractor's proposed sequence of construction for stripping and excavation operations, and methods and type of equipment to be utilized for all excavation operations, including transporting, stockpiling, disposal, and any site dewatering. The plan shall also include areas identified as excavation in the wet, the Contractor's proposed road pattern, and plan for implementing dust control measures.

1.10.1 Equipment

Data for equipment to be used for excavation, hauling, stockpiling and/or disposal shall be submitted and include equipment weight, size, axle loads and contact pressure shall be submitted. The maximum equipment contact pressure shall be 8 psi below elevation 4 feet and 15 psi above elevation 4 feet.

1.11 GENERAL CONDITIONS

Factors such as site conditions, tidal stages, regulatory permit restrictions, and use of excavated material for fill, can influence whether excavation in the dry or in the wet can be utilized. Time restrictions for excavating in the wet are found in SECTION 01505, GENERAL REQUIREMENTS. Excavation in the wet is subject to regulatory and permitting requirements for which the Contractor shall be responsible. Excavation in the wet shall not start until all regulatory requirements have been met and written approval by the Contracting Officer has been provided. Groundwater will be encountered or affect ground conditions as described in SECTION 02020,

SUBSURFACE DATA.

1.12 EXCAVATION FROM RIVER SIDE

Excavation from the river side will not be permitted including dredging or excavation from barges.

1.13 UTILIZATION OF EXCAVATED MATERIALS

Unsatisfactory materials removed from excavations shall be disposed of in the disposal site shown on the contract drawings and in accordance with paragraph "DISPOSAL SITE MATERIAL PLACEMENT". If the optional item "Excavation of Secondary Borrow Site" is exercised by the Government, then the secondary borrow site may be used as a secondary disposal site by the Contractor. No debris or rubble from the project excavations shall be placed in the secondary borrow/disposal site. Unsatisfactory material being wasted in the disposal site shall be free of petroleum products, trash, and contaminated soil. This material shall become the property of the Contractor and disposed of off-site in accordance with all Federal, State, and local regulations and codes, except as otherwise directed. The Contractor shall not abide by such directives unless they are in writing. Rock riprap, concrete rubble, and wood debris from the required project excavations may be crushed to pieces no larger than 3 inches in any dimension and placed in the disposal site to a maximum elevation of 8 feet. A minimum of 4 feet of soil cover shall be placed over the crushed rubble in the disposal site. Alternatively, this material shall become the property of the Contractor and disposed of off-site in accordance with all Federal, State,and local regulations, except as otherwise directed in writing.Satisfactory material removed from excavations shall be used, insofar as practicable, in the construction of fills and embankments. The sequencing and utilization of excavated material for fill material shall be in accordance with SECTION 02310, subparagraphs "Training Dike Fill". No satisfactory excavated material shall be wasted without specific written authorization. Stripped topsoil shall be used to construct the planting berm and to cover the disposal site. Any excess satisfactory material to be wasted shall be disposed of in the disposal site shown on the contract drawing.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

Clearing and grubbing as described in SECTION 02330, CLEARING AND GRUBBING, shall be performed prior to stripping, excavation, or stockpiling.

3.2 PRE-CONSTRUCTION SURVEY

After clearing and grubbing as described in SECTION 02330, CLEARING AND GRUBBING, a pre-construction survey shall be taken for the area to be excavated for the floodplain terrace area to establish the limits for excavation and/or stripping. The survey of the ground surface shall be

performed at significant grade breaks or changes in horizontal extent of excavation, except that the maximum distance between cross sections shall not exceed fifty (50) feet. The objective of this survey is to establish accurate field representation of the limits for excavation and for use as part of the as-built drawings.

3.3 STRIPPING

Prior to stripping, the area shall be cleared and grubbed in accordance with SECTION 02330, CLEARING AND GRUBBING. Stripped material shall be stockpiled at locations convenient to areas that are to receive topsoil replacement as indicated in SECTION 02310, FILLS AND EMBANKMENTS. Topsoil shall be kept separate from other excavated materials, debris, litter, and other materials that would interfere with seeding for re-vegetation.

3.3.1 Training Dike and Ramps

The foundation for the training dike and ramps shall be stripped to a depth of six (6) inches below existing ground. Care shall be exercised to ensure that the depth of stripping does not exceed that specified.

3.3.2 Floodplain Terrace

Prior to stripping, the pre-construction survey shall be approved by the Contracting Officer. The floodplain terrace excavation limits based on the pre-construction survey shall be stripped to a depth of eight (8) inches below existing ground and shall include the side slopes and crown of existing embankment. The extent of stripping shall be limited to where excavation cuts are eight (8) inches or greater in depth.

3.3.3 Optional Item: Secondary Borrow Site

Prior to stripping, the pre-construction survey shall be approved by the Contracting Officer. The secondary borrow site excavation limits based on the pre-construction survey shall be stripped to a depth of six (6) inches below existing ground.

3.4 EXCAVATION

3.4.1 General

Excavation shall not start until the Plan of Operation and pre-construction survey limits have been approved by the Contracting Officer. The Contractor shall perform excavation of every type of material encountered within the limits of the project to the lines, grades, and elevations indicated and as specified. Grading shall be in conformity with the contract drawings and the tolerances specified in paragraph FINISHING. Selective excavation for satisfactory material will be required. Excavated satisfactory materials shall be transported to the location where fill or embankment is to be placed. When the sequence or rate of excavation and/or need for moisture conditioning do not allow direct transportation and placement, the satisfactory materials shall be stockpiled. Unsatisfactory

material shall be transported to the designated disposal site. Excavation in the wet shall not start until all regulatory and permitting and specification requirements have been met and written approval by the Contracting Officer has been received.

3.4.2 Floodplain Terrace Excavation

No excavation shall start until approval of the pre-construction survey limits by the Contracting Officer. No excavation shall be paid for prior to the approval of the pre-construction survey limits. Excavation shall start after stripping has been performed. Excavated satisfactory material shall be used in accordance with SECTION 02310, FILLS AND EMBANKMENT subparagraph "Training Dike Fill". As noted on the logs of explorations, there is buried debris, consisting primarily of wood, asphalt, concrete, and clothing with some trash, in the existing levees along the bank of the Napa River between the Kennedy Park boat ramp and Old Tulocay Creek. According to the exploration logs, from Kennedy Park to Pelusi Road the debris is primarily buried on the water side of the levee section. According to the exploration logs, from Pelusi Road to Old Tulocay Creek the debris is buried throughout the levee section. The amount of buried debris varies along the levee alignment but is estimated to be no more than 40 percent by volume. The Contractor shall remove the buried debris from the excavated soils prior to use of the soils in the training dike or planting berm embankments or wasting in the disposal site. No pieces of debris larger than 3 inches shall be placed in any embankment or in the disposal site. The maximum amount of debris under 3 inches which may be placed in any embankment is 5 percent by volume. The removed debris shall become the property of the Contractor and shall be disposed of in accordance with subparagraph "Utilization of Excavated Materials" in this section.

3.4.3 Marshplain Terrace Excavation

Excavation for this project feature shall not start until completion of the floodplain terrace excavation. As noted on the logs of explorations, there is buried debris, consisting primarily of wood, asphalt, concrete, and clothing with some trash, in the existing levees along the bank of the Napa River between the Kennedy Park boat ramp and Old Tulocay Creek. According to the exploration logs, from Kennedy Park to Pelusi Road the debris is primarily buried on the water side of the levee section. According to the exploration logs, from Pelusi Road to Old Tulocay Creek the debris is buried throughout the levee section. The amount of buried debris varies along the levee alignment but is estimated to be no more than 40 percent by volume. The Contractor shall remove the buried debris from the excavated soils prior to use of the soils in the training dike or planting berm embankments or wasting in the disposal site. No pieces of debris larger than 3 inches shall be placed in any embankment or in the disposal site. The maximum amount of debris under 3 inches which may be placed in any embankment is 5 percent by volume. The removed debris shall become the property of the Contractor and shall be disposed of in accordance with subparagraph "Utilization of Excavated Materials" in this section.

3.4.4 Floodplain Terrace Drainage Swale Excavation

Excavation for the floodplain terrace drainage swales shall not start until completed surveys of the existing ground surface have been submitted and written approval has been received from the Contracting Officer to start work. No payment for excavation will be made until written approval to start work has been received from the Contracting Officer.

3.4.5 Tidal Breach

Excavation for the tidal breach shall not start until completion and acceptance by the Contracting Officer of all other work in this contract. Excavation for the tidal breach shall not start until a completed survey of the finished terrace excavations have been submitted and written approval has been received from the Contracting Officer to start work. No payment for material excavated will be made until written approval to start work has been received from the Contracting Officer and any material excavated before receiving written approval will be immediately replaced at the Contractor's own expense.

3.4.6 Optional Item: Excavation of Secondary Borrow Site

The primary source of material for construction of the training dike is the floodplain and marshplain terrace excavations above elevation 4 feet or above the groundwater level, whichever is lower in elevation. A secondary borrow site is identified on the contract drawings. The secondary borrow site shall only be utilized if insufficient suitable embankment soils are obtained from the floodplain and marshplain terrace excavations. No excavation of the secondary borrow site shall take place without written authorization from the Contracting Officer. No excavation shall be paid for prior to the approval of the pre-construction survey limits. Excavation shall start after stripping has been performed. Excavated satisfactory material shall be used in accordance with SECTION 02310, FILLS AND EMBANKMENT, subparagraph "Training Dike Fill". As noted on the logs of explorations, there is buried debris, consisting primarily of wood, asphalt, concrete, and clothing with some trash, in the secondary borrow site. The amount of buried debris varies throughout the site but is estimated to be no more than 10 percent by volume. The Contractor shall remove the buried debris from the excavated soils prior to use of the soils in the training dike or wasting in the disposal site. No pieces of debris larger than 3 inches shall be placed in any embankment or in the disposal site. The maximum amount of debris smaller than 3 inches which may be placed in any embankment is 5 percent by volume. The removed debris shall become the property of the Contractor and shall be disposed of in accordance with subparagraph "Utilization of Excavated Materials" in this section.

3.5 MATERIAL DISTRIBUTION AND STOCKPILING PLAN

Earth material distribution and stockpile plan describing where material will be obtained, processed, placed and/or stockpiled shall be submitted for approval to the Contracting Officer. Stockpiles used for stripping material, satisfactory fill material and material to be disposed of offsite shall be separated. Stockpiles shall be located as to not adversely

surcharge or make unstable any adjacent slopes. The maximum allowable height of stockpile material without causing instability of the ground or excavation shall be determined by the Contractor. Upon completion of construction operations, all remaining stockpiles shall be removed and disposed of.

3.6 DISPOSAL SITE MATERIAL PLACEMENT

Material designated for disposal, as described in paragraph "UTILIZATION OF EXCAVATED MATERIALS" shall be placed at the disposal site shown on the contract drawings. Material shall be placed in horizontal layers distributed uniformly over the disposal site. Material that is saturated or has free water shall be aerated to achieve water contents near the plastic limit of the material, as determined by ASTM D 4318, to assure traffic ability and compaction before subsequent layer placement. Aeration may be performed within or outside the disposal site. Material layer shall be compacted by track walking equipment having an operating weight of at least 80,000 pounds with a minimum of three complete passes. Routing construction equipment over the material can be used for compaction if it can be demonstrated to the Contracting Officer that the degree of compaction is equal to or greater than track walking. The final grade shall be in accordance with paragraph "FINISHING".

3.7 DRAINAGE

Surface water control shall be accomplished in coordination with the required excavation. Surface water control may necessitate the use of temporary diversion ditches, dikes and grading. Excavation shall be performed so that the site and the area immediately surrounding the site and affecting the site shall be continually and effectively drained. Methods for care of surface water and for controlling the surface water or groundwater levels shall be subject to approval of the Contracting Officer.

3.8 FINISHING

3.8.1 General

The surface of excavations and the disposal site shall be constructed to the lines, grades, and/or elevations shown on the contract drawings and verified by compliance surveys performed by the Contractor. The finished surface shall be a smooth surface free from gullies, humps, bulges or depressions in the surface.

3.8.2 Excavations

Excavations shall have a construction tolerance of three (3) inches above or below the prescribed lines, grades or elevations.

3.8.3 Disposal Site

The material at the disposal site side slopes and top shall have a constructed tolerance of three (3) inches above or below the prescribed grade or elevations provided that surface drains in the direction indicated on the drawings.

3.9 SLIDES

In case sliding occurs in any part of the excavations prescribed in this section after they have been excavated, but prior to final acceptance of all work under the contract, the Contractor shall repair the slide as directed by the Contracting Officer. In case the slide is caused through the fault of the Contractor, it shall be repaired at no cost to the Government. In case the slide is due to no fault of the Contractor, an equitable adjustment in the contract price will be made for the repairs in accordance with the Contract Clause CHANGES.

-- End of Section --

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SECTION 02722

AGGREGATE BASE COURSE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 29/C 29M	(1997) Bulk Density ("Unit Weight") and Voids in Aggregate
ASTM C 117	(1995) Materials Finer Than 75 micrometer (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 127	(1988; R 1993) Specific Gravity and Absorption of Course Aggregate
ASTM C 128	(1993) Specific Gravity and Absorption of Fine Aggregate
ASTM C 131	(1996) Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	(1996a) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 75	(1987; R 1992) Sampling Aggregates
ASTM D 422	(1963; R 1990) Particle-Size Analysis of Soils
ASTM D 1556	(1990; 1996e1) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(1991; R 1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu. m.))
ASTM D 2487	(1993) Classification of Soils for Engineering Purposes (Unified Soil

	Classification System)
ASTM D 2922	(1996) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(1996e1) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 3740	(1999c) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM D 4318	(1995a) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D 5255	(1997e1) Certification of Personnel Engaged in the Testing of Soil and Rock
ASTM E 11	(1995) Wire Cloth Sieves for Testing Purposes

DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS

COE CRD-C 171	Determining Percentage of Crushed Particles in Aggregate

STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION

(1999) Standard Specifications

1.2 DEFINITIONS

For the purposes of this specification, the following definitions apply.

1.2.1 Aggregate Base Course

Aggregate base course (ABC) is well graded, durable aggregate uniformly moistened and mechanically stabilized by compaction.

1.2.2 Degree of Compaction

Degree of compaction shall be expressed as a percentage of the maximum dry density obtained by the test procedure presented in ASTM D 1557 for Procedure "C".

1.3 UNIT PRICES

1.3.1 Measurement

1.3.1.1 Area

The quantity of ABC completed and accepted, as determined by the Contracting Officer, will be measured in square yards.

1.3.2 Payment for Quantities

Quantities of ABC, determined as specified above, will be paid for at the respective contract unit prices, which shall constitute full compensation for the construction and completion of the ABC.

1.4 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Plant, Equipment, and Tools; .

List of proposed equipment to be used in performance of construction work, including descriptive data.

SD-07 Certificates

Qualifications of the commercial testing laboratory or Contractor's testing facilities and personnel.

SD-09 Reports

Sampling and testing; . Field Density Tests; G.

Calibration curves and related test results prior to using the device or equipment being calibrated. Copies of field test results within 24 hours after the tests are performed. Certified copies of test results for approval not less than 30 days before material is required for the work.

SD-18 Records

Waybills and Delivery Tickets; .

Copies of waybills and delivery tickets during the progress of the work. Before the final statement is allowed, the Contractor shall file certified waybills and certified delivery tickets for all aggregates actually used.

1.5 SAMPLING AND TESTING

Sampling and testing shall be the responsibility of the Contractor. Sampling and testing shall be performed by a testing laboratory approved in accordance with Section 01451 CONTRACTOR QUALITY CONTROL. Work requiring testing will not be permitted until the testing laboratory has been inspected and approved. Testing facilities shall meet the requirements outlined in ASTM D 3740 and testing personnel shall meet be certified in accordance with ASTM D 5255. The materials shall be tested to establish compliance with the specified requirements; testing shall be performed at the specified frequency. The Contracting Officer may specify the time and

location of the tests. Copies of test results shall be furnished to the Contracting Officer within 24 hours of completion of the tests.

1.5.1 Test Result Information

Test result information shall be submitted on a "Density Test Log" which shall include but not be limited to the following: test date, test number, feature of work, station/location, offset, elevation, liquid limit, plasticity index, in-place dry unit weight, moisture content, percent compaction, pass or fail, test method, and soil classification.

1.5.2 Sampling

Samples for laboratory testing shall be taken in conformance with ASTM D 75. When deemed necessary, the sampling will be observed by the Contracting Officer.

1.5.3 Tests

The following tests shall be performed in conformance with the applicable standards listed.

1.5.3.1 Sieve Analysis

Sieve analysis shall be made in conformance with ASTM C 117 and ASTM C 136. Sieves shall conform to ASTM E 11.

1.5.3.2 Liquid Limit and Plasticity Index

Liquid limit and plasticity index shall be determined in accordance with ASTM D 4318.

1.5.3.3 Moisture-Density Determinations

The maximum density and optimum moisture content shall be determined in accordance with ASTM D 1557 Procedure "C".

1.5.3.4 Field Density Tests

Density shall be field measured in accordance with ASTM D 1556 and/or ASTM D 2922, Direct Transmission Method. For the method presented in ASTM D 1556 the base plate as shown in the drawing shall be used. For the method presented in ASTM D 2922 the calibration curves shall be checked and adjusted if necessary using only the sand cone method as described in paragraph Calibration, of the ASTM publication. Tests performed in accordance with ASTM D 2922 result in a wet unit weight of soil and when using this method, ASTM D 3017 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall also be checked along with density calibration checks as described in ASTM D 3017. The calibration checks of both the density and moisture gauges shall be made by the prepared containers of material method, as described in paragraph Calibration of ASTM D 2922, on each different type of material being tested at the beginning of a job and at intervals as directed.

1.5.3.5 Wear Test

Wear tests shall be made on aggregate base course material in conformance with ASTM C 131.

1.5.4 Testing Frequency

1.5.4.1 Initial Tests

One of each of the following tests shall be performed on the proposed material prior to commencing construction to demonstrate that the proposed material meets all specified requirements when furnished. If materials from more than one source are going to be utilized, this testing shall be completed for each source.

a. Sieve Analysis.

b. Liquid limit and plasticity index.

c. Moisture-density relationship.

d. Wear.

1.5.4.2 In Place Tests

One of each of the following tests shall be performed on samples taken from the placed and compacted ABC. Samples shall be taken and tested at the rates indicated.

a. Density tests shall be performed on every lift of material placed and at a frequency of one set of tests for every 100-foot station, or portion thereof, of completed area. When nuclear gauge density testing is used, a minimum of one sand cone density test shall be used as a calibration check for each set of five nuclear gauge density tests.

b. Sieve Analysis shall be performed for every 500 tons, or portion thereof, of material placed.

c. Liquid limit and plasticity index tests shall be performed at the same frequency as the sieve analysis.

1.5.5 Approval of Material

The source of the material shall be selected 30 days prior to the time the material will be required in the work; no material shall be delivered to the site prior to tentative approval. Tentative approval of material will be based on initial test results. Final approval of the materials will be based on sieve analysis, liquid limit, and plasticity index tests performed on samples taken from the completed and fully compacted ABC.

1.6 WEATHER LIMITATIONS

Construction shall be done when the atmospheric temperature is above 35

degrees F. When the temperature falls below 35 degrees F, the Contractor shall protect all completed areas by approved methods against detrimental effects of freezing. Completed areas damaged by freezing, rainfall, or other weather conditions shall be corrected to meet specified requirements.

1.7 PLANT, EQUIPMENT, AND TOOLS

All plant, equipment, and tools used in the performance of the work will be subject to approval before the work is started and shall be maintained in satisfactory working condition at all times. The equipment shall be adequate and shall have the capability of producing the required compaction, meeting grade controls, thickness control, and smoothness requirements as set forth herein.

PART 2 PRODUCTS

2.1 AGGREGATES

The ABC shall consist of clean, sound, durable particles of crushed stone, crushed gravel, crushed recycled concrete, angular sand, or other approved material. ABC shall be free of lumps of clay, organic matter, and other objectionable materials or coatings. The portion retained on the No. 4 sieve shall be known as coarse aggregate; that portion passing the No. 4 sieve shall be known as fine aggregate.

2.1.1 Coarse Aggregate

Coarse aggregates shall be angular particles of uniform density. When the coarse aggregate is supplied from more than one source, aggregate from each source shall meet the specified requirements and shall be stockpiled separately.

a. Crushed Gravel: Crushed gravel shall be manufactured by crushing gravels, and shall meet all the requirements specified below.

b. Crushed Stone: Crushed stone shall consist of freshly mined quarry rock, and shall meet all the requirements specified below.

c. Crushed Recycled Concrete: Crushed recycled concrete shall consist of previously hardened portland cement concrete or other concrete containing pozzolanic binder material. The recycled material shall be free of all reinforcing steel, bituminous concrete surfacing, and any other foreign material and shall be crushed and processed to meet the required gradations for coarse aggregate. Crushed recycled concrete shall meet all other applicable requirements specified below.

2.1.1.1 Course Aggregate

Coarse aggregate for ABC shall not show more than 50 percent loss when subjected to the Los Angeles abrasion test in accordance with ASTM C 131. The amount of flat and elongated particles shall not exceed 30 percent. A flat particle is one having a ratio of width to thickness greater than 3; an elongated particle is one having a ratio of length to width greater than 3. In the portion retained on each sieve specified, the crushed aggregates

shall contain at least 50 percent by weight of crushed pieces having two or more freshly fractured faces with the area of each face being at least equal to 75 percent of the smallest midsectional area of the piece. When two fractures are contiguous, the angle between planes of the fractures must be at least 30 degrees in order to count as two fractured faces. Crushed gravel shall be manufactured from gravel particles 50 percent of which, by weight, are retained on the maximum size sieve listed in TABLE 1. crushed particle percentages shall be determined in accordance with COE CRD-C 171.

2.1.2 Fine Aggregate

Fine aggregates shall be angular particles of uniform density. When the fine aggregate is supplied from more than one source, aggregate from each source shall meet the specified requirements.

2.1.2.1 Fine Aggregate

Fine aggregate for ABC shall consist of screenings, angular sand, crushed recycled concrete fines, or other finely divided mineral matter processed or naturally combined with the coarse aggregate.

2.1.3 Gradation Requirements

The specified gradation requirements shall apply to the completed base course. The aggregates shall have a maximum size of 1-inchand shall be continuously well graded within the limits specified in TABLE 1. Sieves shall conform to ASTM E 11.

TABLE I. GRADATION OF AGGREGATES

Percentage by Weight Passing Square-Mesh Sieve

Sieve Designation	Operating Range	Contract Compliance
1-inch	100	100
3/4-inch	90-100	87-100
No. 4	35-60	30-65
No. 30	10-30	5-35
No. 200	2-9	0-12

NOTE 1: The values are based on aggregates of uniform specific gravity. If materials from different sources are used for the coarse and fine aggregates, they shall be tested in accordance with ASTM C 127 and ASTM C 128 to determine their specific gravities. If the specific gravities vary by more than 10 percent, the percentages passing the various sieves shall be corrected as directed by the Contracting Officer.

NOTE 2: Gradations are similar to the gradations shown in Caltrans Standard Specifications, Section 26, for 3/4-inch maximum Class 2 Aggregate Base.

2.1.4 Liquid Limit and Plasticity Index

Liquid limit and plasticity index requirements shall apply to the completed course and shall also apply to any component that is blended to meet the required gradation. The portion of any component or of the completed course passing the No. 40 sieve shall be either nonplastic or have a liquid limit not greater than 25 and a plasticity index not greater than 5.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

When the ABC is constructed in more than one layer, the previously constructed layer shall be cleaned of loose and foreign matter by sweeping with power sweepers or power brooms, except that hand brooms may be used in areas where power cleaning is not practicable. Adequate drainage shall be provided during the entire period of construction to prevent water from collecting or standing on the working area. Line and grade stakes shall be provided as necessary for control. Grade stakes shall be in lines parallel to the centerline of the area under construction and suitably spaced for string lining.

3.2 OPERATION OF AGGREGATE SOURCES

Aggregates shall be obtained from offsite sources.

3.3 STOCKPILING MATERIAL

Prior to stockpiling of material, storage sites shall be cleared and leveled by the Contractor. All materials, including approved material available from excavation and grading, shall be stockpiled in the manner and at the locations designated. Aggregates shall be stockpiled on the cleared and leveled areas designated by the Contracting Officer to prevent segregation. Materials obtained from different sources shall be stockpiled separately.

3.4 PREPARATION OF UNDERLYING COURSE

Prior to constructing the ABC and GCA, the underlying course or subgrade shall be cleaned of all foreign substances. At the time of construction of the ABC, the underlying course shall contain no frozen material. The surface of the underlying course or subgrade shall meet specified compaction and surface tolerances. Ruts or soft yielding spots in the underlying courses, areas having inadequate compaction, and deviations of the surface from the requirements set forth herein shall be corrected by loosening and removing soft or unsatisfactory material and by adding approved material, reshaping to line and grade, and recompacting to specified density requirements. For cohesionless underlying courses containing sands or gravels, as defined in ASTM D 2487, the surface shall be stabilized prior to placement of the ABC. Stabilization shall be accomplished by mixing ABC into the underlying course and compacting by approved methods. The stabilized material shall be considered as part of the underlying course and shall meet all requirements of the underlying course. The finished underlying course shall not be disturbed by traffic or other operations and shall be maintained by the Contractor in a satisfactory condition until the ABC is placed.

3.5 INSTALLATION

3.5.1 Mixing the Materials

The coarse and fine aggregates shall be mixed in a stationary plant, or in a traveling plant or bucket loader on an approved paved working area. The Contractor shall make adjustments in mixing procedures or in equipment as directed to obtain true grades, to minimize segregation or degradation, to obtain the required water content, and to insure a satisfactory ABC meeting all requirements of this specification.

3.5.2 Placing

The mixed material shall be placed on the prepared subgrade in layers of uniform thickness with an approved spreader. Material shall be placed in a single layer of the required thickness. The layer shall be so placed that when compacted it is true to the grades or levels required with the least possible surface disturbance. Such adjustments in placing procedures or equipment shall be made as may be directed to obtain true grades, to minimize segregation and degradation, to adjust the water content, and to insure an acceptable ABC.

3.5.3 Grade Control

The finished and completed ABC shall conform to the lines, grades, and

cross sections shown. Underlying material(s) shall be excavated and prepared at sufficient depth for the required ABC thickness so that the finished ABC with the subsequent surface course will meet the designated grades.

3.5.4 Edges of Base Course

Approved fill material shall be placed along the outer edges of ABC in sufficient quantities to compact to the thickness of the course being constructed, allowing in each operation at least a 2-foot width of this material to be rolled and compacted simultaneously with rolling and compacting of each layer of ABC. If this base course material is to be placed adjacent to another pavement section, then the layers for both of these sections shall be placed and compacted along this edge at the same time.

3.5.5 Compaction

Each layer of the ABC shall be compacted as specified with approved compaction equipment. Water content shall be maintained during the compaction procedure to within plus or minus 2 percent of the optimum water content determined from laboratory tests as specified in paragraph SAMPLING AND TESTING. Rolling shall begin at the outside edge of the surface and proceed to the center, overlapping on successive trips at least one-half the width of the roller. Alternate trips of the roller shall be slightly different lengths. Speed of the roller shall be such that displacement of the aggregate does not occur. In all places not accessible to the rollers, the mixture shall be compacted with hand-operated power tampers. Compaction shall continue until each layer has a degree of compaction that is at least 98 percent of laboratory maximum density through the full depth of the layer. The Contractor shall make such adjustments in compacting or finishing procedures as may be directed to obtain true grades, to minimize segregation and degradation, to reduce or increase water content, and to ensure a satisfactory ABC. Any materials that are found to be unsatisfactory shall be removed and replaced with satisfactory material or reworked, as directed, to meet the requirements of this specification.

3.5.6 Thickness

Compacted thickness of the aggregate course shall be as indicated. The total compacted thickness of the ABC course shall be within 1/2-inch of the thickness indicated. Where the measured thickness is more than 1/2-inch deficient, such areas shall be corrected by scarifying, adding new material of proper gradation, reblading, and recompacting as directed. Where the measured thickness is more than 1/2-inch thicker than indicated, the course shall be considered as conforming to the specified thickness requirements. Average job thickness shall be the average of all thickness measurements taken for the job, but shall be within 1/4-inch of the thickness indicated. The total thickness of the ABC shall be measured at intervals in such a manner as to ensure one measurement for each 50 foot half station along the route of the base course. Measurements shall be made by taking differential elevations at preselected locations between the compacted subgrade and the top of the completed ABC.

3.5.7 Finishing

The surface of the top layer of ABC shall be finished after final compaction by cutting any overbuild to grade and rolling with a steel-wheeled roller. Thin layers of material shall not be added to the top layer of base course to meet grade. If the elevation of the top layer of ABC is 1/2-inch or more below grade, then the top layer should be scarified to a depth of at least 3 inches and new material shall be blended in and compacted to bring the course to grade. Adjustments to rolling and finishing procedures shall be made as directed to minimize segregation and degradation, obtain grades, maintain moisture content, and insure an acceptable base course. Should the surface become rough, corrugated, uneven in texture, or traffic marked prior to completion, the unsatisfactory portion shall be scarified, reworked and recompacted or it shall be replaced as directed.

3.5.8 Smoothness

The surface of the top layer shall show no deviations in excess of 3/8-inch when tested with a 12-foot straightedge. Measurements shall be taken in successive positions parallel to the centerline of the area to be paved. Measurements shall also be taken perpendicular to the centerline at 50-foot intervals. Deviations exceeding this amount shall be corrected by removing material and replacing with new material, or by reworking existing material and compacting it to meet these specifications.

3.6 TRAFFIC

Completed portions of the ABC may be opened to limited traffic, provided there is no marring or distorting of the surface by the traffic. Heavy equipment shall not be permitted except when necessary to construction, and then the area shall be protected against marring or damage to the completed work.

3.7 MAINTENANCE

The ABC shall be maintained in a satisfactory condition until the full pavement section is completed and accepted. Maintenance shall include immediate repairs to any defects and shall be repeated as often as necessary to keep the area intact. Any ABC that is not paved over prior to the onset of winter, shall be retested to verify that it still complies with the requirements of this specification. Any area of ABC that is damaged shall be reworked or replaced as necessary to comply with this specification.

3.8 DISPOSAL OF UNSATISFACTORY MATERIALS

Any unsuitable materials that must be removed shall be disposed of as directed. No additional payments will be made for materials that must be replaced.

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SECTION 02748A

BITUMINOUS TACK AND PRIME COATS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 20	(1970; R 1996) Penetration Graded Asphalt Cement
AASHTO M 81	(1992; R 1996) Cut-Back Asphalt (Rapid-Curing Type)
AASHTO M 82	(1975; R 1996) Cut-Back Asphalt (Medium-Curing Type)
AASHTO M 226	(1980; R 1996) Viscosity Graded Asphalt Cement
AASHTO T 40	(1978; R 1996) Sampling Bituminous Materials

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 140	(200) Sampling Bituminous Materials
ASTM D 946	(1982; R 1999) Penetration-Graded Asphalt Cement for Use in Pavement Construction
ASTM D 977	(1998) Emulsified Asphalt
ASTM D 1250	(1980; R 1997el) Petroleum Measurement Tables
ASTM D 2026	(1972; R 1997) Cutback Asphalt (Slow-Curing Type)
ASTM D 2027	(1976; R 1997) Cutback Asphalt (Medium-Curing Type)
ASTM D 2028	(1976; R 1997) Cutback Asphalt

	(Rapid-Curing Type)
ASTM D 2397	(1998) Cationic Emulsified Asphalt
ASTM D 2995	(1999) Determining Application Rate of Bituminous Distributors
ASTM D 3381	(1992; R 1999) Viscosity-Graded Asphalt Cement for Use in Pavement Construction

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Waybills and Delivery Tickets

Waybills and delivery tickets, during progress of the work.

SD-06 Test Reports

Sampling and Testing

Copies of all test results for bituminous materials, within 24 hours of completion of tests. Certified copies of the manufacturer's test reports indicating compliance with applicable specified requirements, not less than 30 days before the material is required in the work.

1.3 UNIT PRICES

1.3.1 Measurement

The bituminous material paid for will be the measured quantities used in the accepted work, provided that the measured quantities are not 10 percent over the specified application rate. Any amount of bituminous material more than 10 percent over the specified application rate for each application shall be deducted from the measured quantities, except for irregular areas where hand spraying of the bituminous material is necessary. Measured quantities shall be expressed in gallons at 60 degrees F. Volumes measured at temperatures other than 60 degrees F shall be corrected using a coefficient of expansion of 0.00025 per degree F for asphalt emulsion.

1.3.2 Payment

The quantities of bituminous material, determined as specified above, will be paid for at the respective contract unit prices. Payment shall constitute full compensation for all operations necessary to complete the

work as specified herein.

1.3.3 Waybills and Delivery Tickets

Before the final statement is allowed, the Contractor shall file with the Contracting Officer certified waybills and certified delivery tickets for all bituminous materials used in the construction of the pavement covered by the contract. The Contractor shall not remove bituminous material from storage until the initial outage and temperature measurements have been taken. The delivery or storage units will not be released until the final outage has been taken.

1.4 PLANT, EQUIPMENT, MACHINES AND TOOLS

1.4.1 General Requirements

Plant, equipment, machines and tools used in the work shall be subject to approval and shall be maintained in a satisfactory working condition at all times.

1.4.2 Bituminous Distributor

The distributor shall have pneumatic tires of such size and number to prevent rutting, shoving or otherwise damaging the base surface or other layers in the pavement structure. The distributor shall be designed and equipped to spray the bituminous material in a uniform coverage at the specified temperature, at readily determined and controlled rates with an allowable variation from the specified rate of not more than plus or minus 5 percent, and at variable widths. Distributor equipment shall include a separate power unit for the bitumen pump, full-circulation spray bars, tachometer, pressure gauges, volume-measuring devices, adequate heaters for heating of materials to the proper application temperature, a thermometer for reading the temperature of tank contents, and a hand hose attachment suitable for applying bituminous material manually to areas inaccessible to the distributor. The distributor shall be equipped to circulate and agitate the bituminous material during the heating process.

1.4.3 Power Brooms and Power Blowers

Power brooms and power blowers shall be suitable for cleaning the surfaces to which the bituminous coat is to be applied.

1.5 WEATHER LIMITATIONS

Bituminous coat shall be applied only when the surface to receive the bituminous coat is dry. Bituminous coat shall be applied only when the atmospheric temperature in the shade is 50 degrees F or above and when the temperature has not been below 35 degrees F for the 12 hours prior to application.

PART 2 PRODUCTS

2.1 TACK COAT

Emulsified asphalt shall conform to ASTM D 977, Grade SS-1. Cationic emulsified asphalt shall conform to ASTM D 2397, Grade CSS-1.

2.2 PRIME COAT

Emulsified asphalt shall conform to ASTM D 977, Grade SS-1. Cationic emulsified asphalt shall conform to ASTM D 2397, Grade CSS-1.

PART 3 EXECUTION

3.1 PREPARATION OF EMULSION

Bituminous materials for emulsions shall be diluted by adding equal volumes of bituminous material and compatible water. If the bituminous material is to be diluted in the field, first test the mix by placing equal volumes of emulsion and water in a glass jar (do not use a metal container, as it could cause the mixture to "break") and mix for one minute. If the mixture "breaks", a different source of water or bituminous material is required.

3.2 PREPARATION OF SURFACE

Immediately before applying the bituminous coat, all loose material, dirt, clay, or other objectionable material shall be removed from the surface to be treated. The surface shall be dry and clean at the time of treatment. The surface of the aggregate base course may require slight disking to a maximum depth of 1 inch to facilitate penetration of the emulsified prime coat into the surface of the course. The disked surface shall be rerolled and resealed after the prime coat application.

3.3 APPLICATION RATE

The exact quantities within the range specified, which may be varied to suit field conditions, will be determined by the Contracting Officer.

3.3.1 Tack Coat

Bituminous material for the tack coat shall be applied in quantities of not less than 0.05 gallon nor more than 0.15 gallon per square yard of pavement surface.

3.3.2 Prime Coat

Bituminous material for the prime coat shall be applied in quantities of not less than 0.15 gallon nor more than 0.40 gallon per square yard of pavement surface.

3.4 APPLICATION TEMPERATURE

3.4.1 Viscosity Relationship

Asphalt application temperature shall provide an application viscosity between 10 and 60 seconds, Saybolt Furol, or between 20 and 120 centistokes, kinematic. The temperature viscosity relation shall be furnished to the Contracting Officer.

3.4.2 Temperature Ranges

The viscosity requirements shall determine the application temperature to be used. The following is a normal range of application temperatures:

Emulsions	
[SS-1	70-160 degrees F]
[CSS-1	70-160 degrees F]

3.5 APPLICATION

3.5.1 General

Following preparation and subsequent inspection of the surface, the bituminous coat shall be applied at the specified rate with uniform distribution over the surface to be treated. All areas and spots missed by the distributor shall be properly treated with the hand spray. Until the bituminous course is placed, the surface shall be maintained by protecting the surface against damage and by repairing deficient areas at no additional cost to the Government. If required, clean dry sand shall be spread to effectively blot up any excess bituminous material. To obtain uniform application of the prime coat on the surface treated at the junction of previous and subsequent applications, building paper shall be spread on the surface for a sufficient distance back from the ends of each application to start and stop the prime coat on the paper. Immediately after application, the building paper shall be removed and destroyed.

3.6 CURING PERIOD

Following application of the bituminous material and prior to application of the succeeding layer of pavement, the bituminous coat shall be allowed to cure and to obtain evaporation of any volatiles or moisture. If surface disking is not performed, the prime coat shall be allowed to cure without being disturbed for a period of at least 48 hours or longer, as may be necessary to attain penetration into the treated course.

3.7 FIELD QUALITY CONTROL

A sample shall be obtained and tested by the Contractor as directed, under the supervision of the Contracting Officer. The sample may be retained and tested by the Government at no cost to the Contractor.

3.8 SAMPLING AND TESTING

Sampling and testing shall be performed by an approved commercial testing laboratory or by facilities furnished by the Contractor. No work requiring testing will be permitted until the facilities have been inspected and approved.

3.8.1 Sampling

The samples of bituminous material, unless otherwise specified, shall be in accordance with ASTM D 140. Sources from which bituminous materials are to be obtained shall be selected and notification furnished the Contracting Officer within 15 days after the award of the contract.

3.8.2 Calibration Test

The Contractor shall furnish all equipment, materials, and labor necessary to calibrate the bituminous distributor. Calibration shall be made with the approved job material and prior to applying the bituminous coat material to the prepared surface. Calibration of the bituminous distributor shall be in accordance with ASTM D 2995.

3.8.3 Trial Applications

Before providing the complete bituminous coat, three lengths of at least 100 feet for the full width of the distributor bar shall be applied to evaluate the amount of bituminous material that can be satisfactorily applied.

3.8.3.1 Tack Coat Trial Application Rate

Unless otherwise authorized, the trial application rate of bituminous tack coat materials shall be applied in the amount of 0.05 gallons per square yard. Other trial applications shall be made using various amounts of material as may be deemed necessary.

3.8.3.2 Prime Coat Trial Application Rate

Unless otherwise authorized, the trial application rate of bituminous materials shall be applied in the amount of 0.25 gallon per square yard. Other trial applications shall be made using various amounts of material as may be deemed necessary.

3.8.4 Sampling and Testing During Construction

Quality control sampling and testing shall be performed as required in paragraph FIELD QUALITY CONTROL.

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SECTION 02920L

GRASS SEEDING

PART 1 GENERAL

1.1 DESCRIPTION

The goal of this work is to establish vigorous stands of California native grass that provide erosion control and wildlife habitat, and to utilize exotic erosion control grasses for soil stabilization. This section provides grass seeding to help meet permitted requirements of the Regional Water Quality Control Board and shall be coordinated with Section 01356 STORM WATER POLLUTION PREVENTION MEASURES. The work shall consist of seeding grasses to all disturbed soil areas of the project and/or as designated on the plans. The Contractor shall provide all necessary labor, material, equipment, and services for grass seeding and mulching for all designated areas.

1.2 DEFINITIONS

The terms referenced herein are defined as follows:

1.2.1 CO:

Contracting Officer

1.2.2 COR:

Contracting Officer's Representative

1.2.3 Contractor:

The company that is awarded this contract and its sub-contractors.

1.2.4 Seeding:

The act of installing or placing seed, and harrowing it into the soil.

1.2.5 Grass:

When used herein, this term shall refer to all grasses specified herein, including either California native and/or non-native grasses, also referred to as exotic grasses.

1.2.6 Native Grass:

Grasses endemic to California.

1.2.7 Exotic Grass:

Non-native grasses to California.

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AGRICULTURAL MARKETING SERVICE (AMS)

AMS-01 (Amended thru: Aug 1988) Federal Seed Act Regulations (Part 201-202)

COMMERCIAL ITEM DESCRIPTIONS (CID)

CID A-A-1909 (Basic) Fertilizer

FEDERAL

SPECIFICATIONS (FS)

FS O-F-241 (Rev D) Fertilizers, Mixed, Commercial

1.4 QUALIFICATIONS

All work shall be done by an experienced Contractor familiar with California native grasses and its horticulture, and industry methods and standards for grass seeding. The Contractor shall employ modern equipment and state of the art methods and techniques. The Contractor shall have a minimum of 2 years of applicable on the job experience with native grass seeding and weed control.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Qualifications; G

Documentation(resume or other)that the contractor performing seeding operations is experienced and familiar with California native grasses and its horticulture, and industry methods and standards for native grass seeding. Documentation showing a minimum of 2 years of applicable on the job experience with native grass seeding and weed control.

SD-03 Product Data

Equipment List;

Provide a list of equipment to be used for the seeding and mulching operations, including descriptive data and calibration tests. State equipment brand, model and supplier.

Fertilizer;Mulch;Tackifier;Fiber;

Provide data for fertilizer, mulch, tackifier and fiber to be used.

SD-05 Design Data

As-built Drawings; G

As-built drawings, which provide current factual information showing installed seeding locations and identifying seed mix species and seeding rates.

Monthly Establishment Records; G

Written monthly maintenance records identifying work performed and site conditions.

SD-06 Test Reports

Soil Test;

A soil analysis, analyzing specific soil properties, shall be submitted to the Contracting Officer. For results that prove contrary to project requirements, recommendations shall be made based on the results of the analysis and which support using alternative approaches to fertilizer selection or soil amendments to improve soil properties for plant growth.

Final Establishment Report; G

Written report of records of maintenance work performed on native grasses, photos, and site observations. Reports shall include monthly establishment record,as-built plans and color photos.

SD-07 Certificates

Seed; G

Provide certificates of all seed used on the project. Show where seed was purchased from, date purchased, seed species, and purity and germination percentages.

Pesticide;

The material supplier's or equipment manufacturer's statement, that the supplied material or equipment meets specified requirements. Each certificate shall be signed by an official authorized to certify in behalf of material supplier or product

manufacturer and shall identify quantity and date or dates of shipment or delivery to which the certificates apply. Certificates of compliance certifying that herbicide materials meet the requirements specified, before the delivery of materials. Pesticide material shall include EPA registration number and registered uses. Certificates shall be submitted to the Contracting Officer before work is started for work for which it pertains.

1.6 INSPECTIONS

It is the Contractor's responsibility to notify the Contracting Officer at least 5 days prior to each anticipated inspection. The Contracting Officer may at anytime inspect work without notification. The following are key inspection events:

1.6.1 Inspection of Seed, Equipment & Quantities

Seed suppliers are subject to inspection of methods, materials, and processing. Contractor shall provide supplier names and addresses upon award of contract. Seed shall be inspected upon arrival at the job site by the Contracting Officer for conformity to species and quality in accordance with paragraph MATERIALS.

1.6.1.1 Upon Arrival at the Site

The Contractor shall provide the Contracting Officer with receipts of the seed purchased and delivered to the site. Receipts shall provide name of company from which the seed was purchased, seed species, composition, quantity, germination rate, and pure-live-seed percentage. Other material shall be inspected for meeting specified requirements. Unacceptable materials shall be removed from the job site and replaced by the Contractor.

1.6.1.2 Calibration Test

Immediately prior to commencement of seeding operations, the Contractor shall adjust and calibrate equipment as per manufacturer's specifications and field test in the presence of the Contracting Officer.

1.6.2 Inspection of Seeding Operation

Seeding operation shall be inspected during equipment calibration, material loading and seed application.

1.6.3 Seeding Acceptance

A final inspection shall be held by the Contracting Officer to determine any deficiencies in work after completion of seeding operations. Upon receipt and approval of the punch list items, a letter of acceptance will be issued by the Contracting Officer.

1.6.3.1 Preliminary Seeding Inspection

Prior to the completion of the Seeding Period, a preliminary seeding

inspection shall be held by the Contracting Officer. Time for the inspection shall be requested in writing by the Contractor at least 5 working days prior to desired date. The quantity and type of species seeded, clean up requirements and the acceptability of the seeding operation, in accordance with the requirements stated herein, shall be determined and noted in writing.

1.6.3.2 Final Seeding Inspection

A final inspection shall be requested in writing by the Contractor at least 5 working days prior to the desired date. At the final seeding inspection, the Contracting Officer will evaluate the deficiencies noted in the preliminary seeding inspection, to ensure they have been corrected. Time for the inspection shall be established in writing. A "Seeding Acceptance" will be given after all seeding requirements have been satisfactorily completed and approved by the Contracting Officer. PARTIAL ACCEPTANCE OF ANY ITEM OR COMBINATION OF ITEMS WILL NOT BE GIVEN. A written acceptance by the Contracting Officer of all project components, in addition to requirements specified in this section, shall constitute the beginning of the Establishment Period.

1.6.3.3 Final Establishment Inspection

Prior to the completion of the Establishment Period, a Final inspection shall be held by the Contracting Officer. The Contractor shall request time for the inspection in writing at least 5 working days prior to the desired date. All deficiencies shall be noted at that time and corrected within 10 working days. The acceptability of the grass in accordance with the Establishment Period shall be determined. Once acceptibility of the establishment period has been determined a written acceptance by the Contracting Officer shall be issued.

1.7 SHIPMENT, DELIVERY, STORAGE AND HANDLING

1.7.1 Shipment

Preparation for shipment shall be done in a manner that will not cause damage to seeds, fertilizers, pesticides and all other material.

1.7.2 Deliver

Seeds, fertilizers, pesticides and all other material shall be protected from weather and contamination during delivery.

1.7.3 Storage

Material shall be stored in areas approved by the Contracting Officer. Seed and fertilizer shall be stored in cool, dry locations out of direct sunlight and away from contaminants. Chemical and pesticide material shall not be stored with other landscape materials and shall be stored in a spillage contained area. Mulch shall be kept covered from rain.

1.7.4 Handling

Except for bulk deliveries, material shall not be dropped or dumped from vehicles.

1.8 TIMES AND CONDITIONS

1.8.1 Seeding Times

All grasses shall be seeded at the earliest available time and be completed by 15 October 2002. No variance to the start date will be allowed unless given in writing by the Contracting Officer.

1.8.2 Seeding Period

The Seeding Period begins, when the Notice to Proceed is given and continues until all requirements indicated in this specification are completed and approved and a written acceptance is given by the Contracting Officer.

1.8.3 Seeding Conditions

Seeding and construction operations shall be performed only during periods when beneficial results can be obtained. When excessive moisture, winds or other unsatisfactory conditions prevail, the work shall be stopped when directed by the Contracting Officer. The Contractor shall schedule planting in the mornings to avoid stressing plants during seeding, if the planting schedule calls for installation when the temperature is expected to be 90 degrees Fahrenheit/32 degrees Centigrade or greater. When special conditions warrant a variance to the planting operations, a proposed seeding time shall be submitted in writing to, and approved by, the Contracting Officer. The Contractor shall be prepared to seed at the earliest time when all conditions (weather, moisture, temperature, tides and river flows, etc…) are acceptable.

1.8.4 Establishment Period

The "Establishment Period" begins, when all items indicated for seeding installation have been satisfactorily completed and the Contracting Officer has given an "Installation Acceptance" in writing.

1.8.4.1 Native Grasses

The establishment period for Native grasses shall terminate on 1 April 2003 and upon written acceptance of the "Native grass establishment Period" by the Contracting Officer

1.8.4.2 Exotic Grass

The establishment Period Shall for Exotic Grasses shall be for 60 continuous days.

1.9 MEASUREMENT AND PAYMENT

Measurement and payment for each requirement stated herein shall be as indicated below:

1.9.1 Native Grass Seeding

Native grass seeding shall be measured by the number of acres seeded in accordance with plans and specifications and as directed by the Contracting Officer. Payment for " Native Grass Seeding" shall be made at their respective unit price per acre, and shall be in full compensation for all labor, materials, and costs associated with native grass seeding. Payment shall include, but not be limited to: seed, storage, handling, delivery, equipment calibration, endomycorrhizal inoculum application, composting, seeding, fiber, fertilizing and harrowing.

1.9.2 Exotic Grass Seeding

Exotic grass seeding shall be measured by the number of acres seeded in accordance with plans and specifications and as directed by the Contracting Officer. Payment for " Exotic Grass Seeding" shall be made at their respective unit price per acre, and shall be in full compensation for all labor, materials, and costs associated with exotic grass seeding. Payment shall include, but not be limited to: seed, storage, handling, delivery, equipment calibration, application seeding, fiber, tackifier, harrowing, and exotic grass establishment.

1.9.3 Soil Test

Soil Testing shall not be measured. Payment for "Soil Testing" shall be at a lump sum price in accordance with plans and specifications and as directed by the Contracting Officer. Payment shall be in full compensation for all labor, materials, and costs associated with, but not limited to: soil sample collection, analyzing, documenting and recommending fertilizer and soil amendment variations.

1.9.4 Discing

Discing shall be measured by the number of acres disced in accordance with plans and specifications and as directed by the Contracting Officer. Payment for "Discing" shall be made at their respective unit price per acre, and shall be in full compensation for all labor, materials, and costs associated with Discing. Payment shall include, but not limited to: discing or tilling, plowing and raking (for rock removal), and ring rolling.

1.9.5 Pesticide Application

Pesticide Application shall be measured by the number of events in accordance with plans and specifications and as directed by the Contracting Officer. Payment for "Pesticide application" shall be made at their respective unit price per event, and shall be in full compensation for all labor, materials, and costs associated with pesticide application. Payment shall include, but not be limited to: pesticide spraying. pesticide application shall apply to Native grass areas only.

1.9.6 Grass Seeding As-builts

Grass seeding as-builts shall not be measured. Payment for "Grass Seeding

As-builts" shall be at a lump sum price in accordance with plans and specifications and as directed by the Contracting Officer. Payment shall be in full compensation for all labor, materials, and costs associated with Grass Seeding As-builts, but not limited to: preparing base mapping, updating data on drawings and submitting required drawings and electronic files to the Government.

1.9.7 Final Establishment Report

Final establishment report shall not be measured. Payment for "Final Establishment Report" shall be at a lump sum price in accordance with plans and specifications and as directed by the Contracting Officer. Payment shall include, but not be limited to: reporting, monthly establishment records, as-maintained drawings,and colored photographic documentation.

PART 2 PRODUCTS

2.1 SEED

2.1.1 Seed Clarification

State-certified seed of the latest season's crop shall be provided in original sealed packages bearing the producer's guaranteed analysis for percentages of mixture, purity, germination, hard seed, weed seed content, and inert material. Labels shall be in conformance with AMS-01 and applicable state seed laws. AOSCA / CCIA certifications for seeds are encouraged.

2.1.2 Seed Quality

Weed seed shall not exceed 1 percent by weight of the total mixture. Wet, moldy, insect infested, or otherwise damaged seed shall be rejected and removed from project site. Open containers of seed or improperly tagged containers will be rejected and removed from project site.

2.1.2.1 Sampling

For all seeds or containers, it is the option of the government to take random samples for each species, and require the Contractor to provide analysis of samples at no extra cost to the government.

2.1.3 Seeding Mix

The mixing of seed shall be performed by the Contractor, in the presence of the Contracting Officer, on site as directed by the Contracting Officer.

2.1.4 Substitutions

Substitutions will not be allowed without written request and approval from the Contracting Officer.

2.2 SEED SPECIES AND SEEDING RATES

2.2.1 Native Grass, Dry Mix

Native grass seed species and seeding rates for sites located above 6' NGVD to include upper portions of the planting berm and training dike shall be as follows:

Botanical Name	Native Grass Dry Mixture Common Name	Pounds Pure Live Seed per Acre Drill Seeding	Broadcast Seeding	Hydro-seeding
Elymus glaucus	Blue Wildrye	2	4	4
Leymus triticoides	Creeping Wildrye	2	4	4
Nassella pulchra	Purple Needlegrass	10	17	17
Nassella cernua	Nodding Needlegrass	3	5	5
Poa Secunda	Pine Bluegrass	3	5	5
TOTAL		20	35	35

2.2.2 Native Grass, Wet Mix

Native grass seed species and seeding rates for locations below 6' NGVD to include the floodplain terrace and lower sections of the planting berm and training dike are as follows:

Botanical Name	Native Grass Wet Mixture Common Name	Pounds Pure Live Seed per Acre Drill Seeding	Broadcast Seeding	Hydro-seeding
Hordeum brachyantherum	Meadow Barley	8	15	15
Leymus triticoides	Creeping Wildrye	11	19	19
TOTAL		19	34	34

2.2.3 Exotic Grass

Exotic grass seed species and seeding rates for all locations located land side of the training dike, to include staging areas, haul roads, disposal sites and all other areas disturbed by construction activities shall be as follows:

Botanical Name	Exotic Grass Mixture Common Name	Pounds Pure Live Seed per Acre Drill	Broadcast	Hydro-

	Exotic Grass Mixture			
		Seeding	Seeding	Seeding
Vulpia myuros	Zorro Fescue	6	10	10
Bromus hordeaceus	Blando Brome	12	20	20
Trifolium Hirtum	Rose Clover	8*	17*	17*
Eschscholzia californica	California Poppy	3	5	5
Lupinus bicolor	Lupine	6	10	10
TOTAL		35	62	62

*Rose clover shall be inoculated. The seeding rate shown reflects the weight of seed without the inoculum.

2.3 PESTICIDES

2.3.1 Contact Pesticide

The contact pesticide shall be selected by the Contractor and approved by the Contracting Officer before application. It shall be a glyphosate based spraying or wicking program.

2.3.2 Broadleaf Pesticide

The broadleaf pesticide shall be selected by the Contractor and must be approved by the Contracting Officer before application. It shall be 2-4D, MCPA, bromozynil, dicamba, Transline w/ Surfactant or approved others.

2.3.3 Pre-emergent Pesticide

The pre-emergent pesticide shall be selected by the Contractor and must be approved by the Contracting Officer before application. It shall be diuron, chlor-sulfuron, pendamenthalin, or approved others

2.4 MULCH

Mulch shall be free from noxious weeds and seeds, mold, and other deleterious materials.

2.4.1 Straw

Straw shall be stalks from, in order of preference: native grasses or rice furnished in air-dry condition and with a consistency for placing with commercial mulch-blowing equipment.

2.4.2 Wood Cellulose Fiber

Wood cellulose fiber be commercially available and produced from virgin wood fiber. Fiber shall be of such character that fiber will disperse into a uniform slurry when mixed with water. The water content of the fiber before mixing into the slurry shall not exceed 15 percent of the dry weight of the fiber. The moisture content of the fiber shall be clearly marked on the package.

Fiber shall not contain more than 7 percent ash as determined by the Technical Association of the Pulp and Paper Industry (TAPPI) Standard T

413, and shall be nontoxic to plant or animal life.

Fiber shall have a water-holding capacity by weight of not less than 1,200 percent. Water-holding capacity of the fiber shall be marked on the package.

Fiber shall be colored to contrast the area on which the fiber is to be applied. The material used for color shall be nontoxic to plant and animal life and shall not stain concrete or painted surfaces.

2.4.3 Paper Fiber

Paper fiber mulch shall be recycled news print that is shredded for the purpose of mulching seed. It shall not contain any growth or germination-inhibiting factors and shall be dyed an appropriate color of green to facilitate placement during application. Composition on air-dry weight basis: 9 to 15 percent moisture, pH range from 4.5 to 6.0. **Paper fiber shall not be used in native grass seeding locations**.

2.5 TACKIFIER

Tackifier shall be a concentrated, biodegradable and organic derivative of the Plantago plant (Plantago insularis). Tackifier shall be non-toxic to plant and animal life, non-corrosive, and non-crystalline and be non-staining to concrete or painted surfaces. Tackifier shall conform to Sections 20-2.11 and Special Provisions Section 10-1.19 of the State of California Department of Transportation Standard Specifications for "Stabilizing Emulsion".

2.6 COMPOST

Compost shall be derived from green material consisting of chipped, shredded, or ground vegetation or clean, processed, recycled wood products or a Class A, exceptional quality biosolids composts, as required by the United States Environmental Protection Agency (EPA), 40 CFR, Part 503c regulations or a combination of green material and biosolids compost. The compost shall be processed or completed to reduce weed seeds, pathogens, and deleterious material, and shall not contain paint, petroleum products, herbicides, fungicides, or other chemical residues that would be harmful to plant or animal life. Other deleterious material, plastic, glass, metal, or rocks shall not exceed 0.1 percent by weight or volume.

A minimum internal temperature of 57°C shall be maintained for at least 15 continuous days during the composting process. The compost shall be thoroughly turned a minimum of 5 times during the composting process and shall go through a minimum 90-day curing period after the 15-day thermophilic compost process has been completed. Compost shall be screened through a maximum 9.5-mm screen.

The moisture content of the compost shall not exceed 35 percent. Compost products with a higher moisture content may be used provided the weight of the compost is increased to equal the compost with a moisture content of 35–40 percent. Moist samples of compost on an as-received basis shall be dried in an oven at a temperature between 105°C and 115°C until a constant

dry weight of the sample is achieved. The percentage of moisture will be determined by dividing the dry weight of the sample by the moist weight of the sample and then multiplying by 100. Compost will be tested for maturity and stability with a Solvita test kit. The compost shall measure a minimum of 6 on the maturity and stability scale.

2.7 Fertilizer

Organic fertilizer shall be BIOSOL 7-2-3 or approved equal and shall conform to the following specifications:

Nitrogen (total)	7%
Nitrogen (water soluble)	0.5%
Available Phosphoric Acid (P2O2)	2%
Soluble Potash (K2O)	3%
PH Level	Approximately 5.4

Heavy metal Contents

Copper	mg/kg/ of DS	11.8
Iron	mg/kg/ of DS	1.865
Nickle	mg/kg/ of DS	5.25
Chromium	mg/kg/ of DS	6.0
Lead	mg/kg/ of DS	2.25
Cadmium	mg/kg/ of DS	0.092
Zinc	mg/kg/ of DS	65.0

2.8 WATER

Water shall be the responsibility of the Contractor, unless otherwise noted. Water shall not contain elements toxic to plant life.

2.9 ENDOMYCORRHIZAL

Endomycorrhizal (arbuscular) inoculum shall consist of spores, mycelium, and mycorrhizal root fragments in a solid carrier suitable for handling by hydro-seeding or dry seeding equipment. The carrier shall be the material in which the inoculum was originally produced, and may include organic materials, vermiculite, perlite, calcined clay, or other approved materials consistent with mechanical application and with good plant growth. Each endomycorrhizal inoculum shall carry a supplier's guarantee of number of propagules per unit weight or volume of bulk material. If more than one fungal species is claimed by the supplier, the label shall include a guarantee for each species of mycorrhizal fungus claimed.

PART 3 EXECUTION

3.1 Soils Testing

The Contractor shall perform soil tests to determine soil properties for soil texture, organic content, pH, particle size, nutrient level, salinity, chemical analysis and mechanical analysis. If the analysis indicates the soil is detrimental to plant growth, they shall notify the Contracting

Officer, in writing immediately and before the Contractor commences construction or installation of all other requirements. Based upon this analysis, an alternate fertilizer may be recommended by the Contractor if the fertilizer specified is not capable of supporting the plants growth. Sufficient soil samples shall be taken to determine the post excavation soils affect on the proposed plant growth.

3.1.1 Testing Locations

Soils test are only required from designated native grass seeding locations. The Contractor shall perform tests at three representative separate locations within the site boundaries. The test locations shall be representative of site conditions **after excavation** has been completed. One vertical tests shall be performed at each location at six inches below the soil surface. Record, map and submit the analysis with the first year annual reports.

3.2 Discing

The Contractor shall disc all designated **native grass** seeding areas to a depth of six (6) inches. The Contractor shall make as many cross passes as necessary to thoroughly incorporate all herbaceous vegetation and soil amendments into the soil. The Contractor may utilize tilling in-place of discing, if so desired.

3.2.1 Smoothing and Ring Rolling

In designated **native grass** seeding areas, soil conditions such as large clods may require smoothing with a land plane or ring roller prior to seeding, as determined by the Contracting Officer.

3.3 SEEDING

The Contractor shall seed all **native grass** locations with slopes less than 3:1 using the drill method. Drill seeded areas shall include the floodplain terrace and planting berm. All native grass locations with slopes greater than 3:1 shall be seeded using the broadcast or hydroseed method. Broadcast or hydroseed native grass areas shall include the training dike slopes. It shall be the Contractors option to utilize drill, broadcast or hydroseed methods for all locations receiving exotic seed mix. Prior to seeding, any previously prepared seedbed areas compacted or damaged by interim rain, traffic or other cause, shall be reworked to restore the ground for optimum seedbed conditions.

3.3.1 Broadcast Seeding

Seed shall be uniformly broadcast using mechanical broadcast seeders at the rate as specified under paragraph SEED SPECIES AND SEEDING RATES. Half of seed shall be broadcast in one direction, and the remainder at right angles to the first direction. Seed shall be covered to an average depth of ¼ inch by harrowing with steel mat or chain drag, cultipacker, or other approved device. For slopes steeper than 2H:1V or inaccessible areas, hand broadcasting may be required and harrow or hand raking where practical.

3.3.1.1 Native Grasses

The Contractor shall employ the following steps when broadcast seeding native grasses:

A. Broadcast endomycorrhizal inoculum (at rate specified)
B. Spread organic compost at 3000 lbs per acre
C. Disc and incorporate compost and endomycorrhizal inoculum into soil(endomycorrhizal inoculum shall be incorporated into soil within 3 hours of broadcasting)
D. Seed Mix, as specified and at rate specified
E. Broadcast Fertilizer (Biosol or approved equal), at a rate of 10000 lbs per acre
F. Harrow seed and fertilizer

3.3.2 Drill Seeding

Seed shall be uniformly drilled to a maximum ½ inch depth and at the rate specified under paragraph SEED SPECIES AND SEEDING RATES, using equipment having drills a maximum 7 inches apart. Row markers shall be used with the drill seeder. The drilling equipment shall be maintained, at minimum, with half full seed boxes during the seeding operations. Furrows created from drill seed operations shall run perpendicular to slopes, to minimize erosion.

3.3.2.1 Native Grasses

The Contractor shall employ the following steps when Drill seeding native grasses:

A. Broadcast organic compost at 3000 lbs per acre
B. Disc and incorporate compost into soil
C. Drill Seed Mix and endomycorrhizal inoculum as specified and at rate specified
D. Broadcast Fertilizer (Biosol or approved equal), at a rate of 10000 lbs per acre

3.3.3 Hydroseeding

Seed species shall be mixed to ensure a seeding rate as specified under paragraph SEED SPECIES AND SEEDING RATES. When utilized, wood cellulose fiber shall be added to the mixture after the water and other mixture components have been thoroughly mixed to produce a homogeneous slurry. The slurry shall have the proper consistency to adhere to the earth slopes without lumping or running. The time period for the seed to be held in the slurry shall be a maximum 24 hours. Slurry shall be uniformly applied under pressure over the entire designated area. The hydroseeded area shall not be rolled.

3.3.3.1 Native Grasses

The Contractor shall employ the following two-step hyrdoseeding process:

Step 1: Apply the first step as a complete mixture as indicated below

A. Wood Cellulose Fiber, at a rate of 1000 lbs per acre
B. Organic Compost, at a rate of 1,500 lbs per acre
C. Seed Mix, as specified and at rate specified
D. Fertilizer (Biosol or approved equal), at a rate of 10000 lbs per acre
E. Endomycorrhizal Inoculum, at a rate of 3,600,000 propagules per acre

Step 2: Apply the second step as a complete mixture as indicated below:

A. Wood Cellulose Fiber, at a rate of 500 lbs per acre
B. Tackifier, at a rate of 100 lbs per acre

3.3.3.2 Exotic Grasses

The Contractor shall employ the following one-step hyrdoseeding process:

Step 1: Apply the first step as a complete mixture as indicated below.

A. Seed Mix, as specified and at rate specified
B. Fertilizer (16-20-0), at a rate of 300 lbs per acre
C. Hydromulch fiber, at a rate of 1,500 per acre
D. Tackifier, at a rate of 80lbs per acre

3.4 APPLYING ENDOMYCORRHIZAL INOCULUM

The Contractor shall apply Endomycorrhizal inoculum to all locations receiving **native grass** seeding as per requirements for method used.

3.4.1 Application with Broadcast Seeding

The Contractor shall incorporate Endomycorrhizal Inoculum by broadcasting prior to seeding operations. Inoculum shall be applied at the rate of 3,600,000 propagules per acre based on the supplier's certification or an analysis returned by an independent laboratory. The broadcast device shall not grind or unduly compress the carrier granules or fungal spores. The inoculum shall be incorporated into the soil within three hours of broadcasting by discing the soil and shall result in incorporation of 80% of the inoculum granules to a depth of 1 to 6 inches.

3.4.2 Application with Drill Seeding

The Contractor shall incorporate Endomycorrhizal Inoculum as part of seed drilling operations. Inoculum shall be applied at the rate of 3,600,000 propagules per acre (8,900,000 per hectare) based on the supplier's certification or an analysis returned by an independent laboratory. The inoculum shall be added to the seed bin of the drill seeder and mixed into the seeds and such materials as wheat bran. Endomycorrhizal inoculum must not be placed in any equipment that has heated up in the sun to a temperature highter than 90 degrees F (32 degrees C). If the seed drill is equipped with a separate bin for mycorrhizal inoculum, the inoculum shall be dispensed from the separate bin in accordance with the operating procedures specified for the equipment.3.4.3 Application with Hydroseeding

Endomycorrhizal inoculum shall be applied at the rate of 3,600,000

propagules per acre (8,900,000 per hectare) based on the supplier's certification or an analysis returned by an independent laboratory before or in the same application as the seeds. Inoculum must be applied within one hour of addition to the mixing tank. In no case shall Endomycorrhizal inoculum be applied after the seeds. Inoculum must be applied within one hour of addition to the mixing tank. A second pass with mulch at the rate of is required to cover exposed seed and inoculum. If temperatures will exceed 90 degrees F (32 degrees C), remaining erosion control applications must be applied within three ours of the application of the inoculum.

3.5 MULCH AND TACKIFIER

All seeded areas, as identified in the Storm Water Pollution Protection Plan, shall be mulched and tackified after seeding operations.

3.5.1 Applying Straw

Straw mulch shall be applied to designated seeded areas upon completion and approval of the seeding application by the Contracting Officer. Mulch shall be spread by hand, blower-type mulch spreader or other approved method. Mulching shall be started on the windward side of relatively flat areas or on the upper part of a steep slope and continued uniformly until the area is covered. The mulch shall be applied loose and not be bunched. All designated areas shall be mulched within 48 hours of seeding. Rate of mulch application shall be 2 tons per acre of native grass straw or 1-1/2 tons per acre for rice straw.

3.5.2 Applying Tackifier

All straw mulch areas shall be anchored with a commercially available dyed organic tackifier.

3.5.3 Crimping or Punching

As a substitute for tackifying, all straw areas shall be mechanically crimped or punched into soil.

3.5.4 Applying Fiber

Wood cellulose fiber (native grasses), paper fiber (option for exotic grasses), or recycled paper(option for exotic grasses) shall be applied as part of the hydroseeding operation. The mulch shall be mixed and applied in accordance with the manufacturer's recommendations.

3.6 MAINTENANCE DURING SEEDING PERIOD

Maintenance shall begin immediately after seeding is completed and shall continue throughout the Seeding Period. Maintenance of the seeded areas shall include the following until Seeding Acceptance is given: regular observations of the site, spraying for weed control, and repair of damaged areas.

3.6.1 Weed Control After Seeding

If weeds germinate after seeding installation and prior to seeding acceptance the Contractor shall provide pesticide spraying over designated **native grass** seeded area(s) for broadleaf and annual grasses. This weeding effort shall be 1 of the 3 projected Pesticide Application for Seeding events as stated in the pricing schedule, and shall be separate from weeding efforts conducted during the native grass establishment period. At no time shall pesticide application affect the health and vigor of native grasses. Application rate shall be as per manufacturer's recommendations for targeted species. Weeding operations

3.6.2 Repair

All Contractor damaged areas shall be repaired by the Contractor to their original condition within 5 working days.

3.7 CLEANUP

Excess and waste material shall be removed from the seeded and staging areas and shall be disposed of off the site.

3.8 NATIVE GRASS ESTABLISHMENT

The following requirements shall apply to designated native grass seeding areas only.

3.8.1 Weed Control

Site conditions shall govern whether weed control measures shall occur. The Contractor is required to perform the following projected quantity tasks,(2 of the 3 Pesticide Application for Seeding events as stated in the pricing schedule), and shall be exercised at the discretion of the Contracting Officer. Application rate shall be as per manufacturer's recommendations for targeted species.

3.8.1.1 Pesticide application

A.Annual Grass Weeds: If and when temperature and soil moisture conditions cause annual grass germination prior to the germination of native grasses then the contractor shall apply pesticide to said annual grasses. Annual grass shall be clearly identified and no signs of native grass germination shall be present prior to pesticide application. Application of pesticide to annual grasses shall occur within 5 working days of detection of annual grass germination.

B. Broadleaf Weeds: If and when Broadleaf weeds are detected on site the contractor shall apply selective pesticide to said broadleaf weeds. Pesticide application for broadleaf weeds shall occur a minimum of 6-8 weeks after seeding installation acceptance.

3.9 EXOTIC GRASS ESTABLISHMENT

3.9.1 Establishment Duration

The Contractor shall be required to provide maintenance for exotic species seeded areas for a period of 60 continuous days starting from Seeding Acceptance.

3.9.2 Establishment Tasks

The Contractor shall perform the following tasks:

3.9.3 Repair

All locations damaged by contractor operations or natural caused shall be restored to their condition at the time of Seed Installation Acceptance.

3.10 FINAL ESTABLISHMENT REPORT

The Contractor shall provide project information which documents past and current conditions of the **native grass seeding areas only** and prepare and submit to the Contracting Officer as indicated below:

3.10.1 As-Maintained Drawings

The Contractor shall prepare as-maintained drawings of the work completed herein. The as-maintained drawings shall be based upon the as-built drawings. These drawings shall be updated to include all current conditions, impacts and results of the seeding.

3.10.2 Monthly Establishment Records

The Contractor shall prepare and keep current a record of monthly maintenance performed on the project. The report shall identify at a minimum, project name, planting zones, date and establishment period. It shall identify and discuss weed control performed, irrigation activity and maintenance, plant health, vandalism, site feature conditions, general observations, total precipitation for the month, personnel onsite, and any other pertinent information describing site conditions and activities performed during the month. See Form A for example of outline attached at the end of this section.

3.10.3 Final Report

The Contractor shall submit a final report to the Government. Each report shall be submitted in 8.5"x11" report format, as well as a current electronic copy in MS Word. When drawings are submitted, folded 11"x17" sheets are acceptable.

The yearly reports shall document current plant and site condition, as well as, conditions during the past year. The Contractor shall survey grass survival and document as a percentage in the report.

The yearly reports shall be bond with a title sheet and table of contents and include copies of the following: As-Maintained Drawings (reduced to 8.5"x11" or 11"x17" format), Monthly Establishment Records, Survival results, soil test results and a color photographic documentation of the site which is representative of plant and site conditions, as well as, a

discussion of the maintenance activities performed.

PART 4

ATTACHMENTS

ATTACHMENT 4.1

(Example)
FORM A
Monthly Establishment Record
For Revegetation Projects

Project:
Planting Zone:
Date:
Establishment Period:

OUTLINE
Briefly discuss the events listed below

1. Weed Control: (discuss when, where, and what was done)
   Mowing, Pesticide Application, Discing, Burning, etc…

2. Plant Health:

3. Vandalism:

4. Site Feature Condition:
   Access Road, Fences, Signs, etc…

5. Site Condition:

6. General Observations:

7. Precipitation (total for month):

8. Personnel:

9.Other:

-- End of Section --

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SECTION 03150

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SECTION 03150

EXPANSION, CONTRACTION AND CONSTRUCTION JOINTS IN CONCRETE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 920	(1995) Elastomeric Joint Sealants
ASTM D 1751	(1983; R 1991) Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D 1752	(1984; R 1996) Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

1.2 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-09 Reports

Premolded Expansion Joint Filler Strips; .

Certified manufacturer's test reports shall be provided for premolded expansion joint filler strips to verify compliance with applicable specification.

SD-14 Samples

Field Molded Sealants and Primer; .

Certified copies of maufacturer's test reports shall be provided for field molded sealants and primer to verify compliance with applicable specifications.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Premolded Expansion Joint Filler Strips

Premolded expansion joint filler strips shall conform to ASTM D 1751 or ASTM D 1752, Type I, or resin impregnated fiberboard conforming to the physical requirements of ASTM D 1752.

2.1.2 Joint Seals and Sealants

2.1.2.1 Field Molded Sealants and Primer

Field molded sealants shall be polyurethane. The sealant and primer shall conform to ASTM C 920, Type M, Grade NS, Class 25, use NT for vertical joints and Type M, Grade P, Class 25, use T for horizontal joints. Bond breaker material shall be polyethylene tape, coated paper, metal foil or similar type materials. The back-up material shall be compressible, nonshrink, nonreactive with sealant, and nonabsorptive material type such as extruded butyl or polychloroprene foam rubber.

2.2 [Enter Appropriate Subpart Title Here]2.2.1 [Enter Appropriate Subpart Title Here]PART 3 EXECUTION

3.1 INSTALLATION

Joint locations and details, including materials and methods of installation of joint fillers, shall be as specified, as shown, and as directed. In no case shall any fixed metal be continuous through an expansion or contraction joint.

3.1.1 Expansion Joints

Premolded filler strips shall have oiled wood strips secured to the top thereof and shall be accurately positioned and secured against displacement to clean, smooth concrete surfaces. The wood strips shall be slightly tapered, dressed and of the size required to install filler strips at the desired level below the finished concrete surface and to form the groove for the joint sealant or seals to the size shown. Material used to secure premolded fillers and wood strips to concrete shall not harm the concrete and shall be compatible with the joint sealant or seals. Aluminum materials or materials containing aluminum which would contact the concrete, shall not be used. The wood strips shall not be removed until after the concrete curing period. The groove shall be thoroughly cleaned of all laitance, curing compound, foreign materials, protrusions of hardened concrete and any dust which shall be blown out of the groove with oil-free compressed air.

3.1.1.1 Joints With Field-Molded Sealant

Joints shall not be sealed when the sealant, air or concrete temperature is less than 40 degrees F. Immediately prior to installation of field molded sealants, the joint shall be cleaned of all debris and further cleaned using water, chemical solvents or other means as recommended by the sealant manufacturer. The joints shall be dry prior to filling with sealant. Bond breaker and back-up material shall be installed where required or as

recommended by the manufacturer. Joints shall be primed and filled flush with joint sealant in accordance with the manufacturer's recommendations.

3.1.2 Contraction Joints

Joints requiring a bond breaker shall be coated with curing compound or with bituminous paint.

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SECTION 03307

CONCRETE FOR MINOR STRUCTURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 308	(1992) Standard Practice for Curing Concrete
ACI 318/318R	(1992) Building Code Requirements for Reinforced Concrete
ACI 347	(1989) Formwork for Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 31	(1991) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(1993) Concrete Aggregate
ASTM C 39	(1994) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 94	(1995) Ready-Mixed Concrete
ASTM C 143	(1990a) Slump of Portland Cement Concrete
ASTM C 150	(1994) Portland Cement
ASTM C 171	(1992) Sheet Materials for Curing Concrete
ASTM C 172	(1992) Sampling Freshly Mixed Concrete
ASTM C 231	(1991b) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(1986) Air-Entraining Admixtures for Concrete
ASTM C 309	(1993) Liquid Membrane - Forming Compounds for Curing Concrete
ASTM C 494	(1992) Chemical Admixtures for Concrete

ASTM C 618	(1994) Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete

ARMY CORPS OF ENGINEERS, WATERWAYS EXPERIMENT STATION (COE)

COE CRD-C 400	(1963) Water for Use in Mixing or Curing Concrete

1.2 PAYMENT

Payment will be made at the contract lump sum price for the bid item, **"Pedestrian Bridge Abutments"**, which price shall include the costs of all labor, materials and the use of all equipment and tools required to construct the concrete work. The abutment structures work includes wingwalls and all site work associated with the bridge abutments that are required to complete the pedestrian bridge as shown on the contract drawings; i.e. excavation, all fill materials, drains, final grading, etc.

1.3 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTAL PROCEDURES:

SD-08 Statements

Proportions of Mix; G.

The results of trial mix along with a statement giving the maximum nominal coarse aggregate size and the proportions of all ingredients that will be used in the manufacture of each strength of concrete shall be provided to the Government, at least 30 days prior to commencing concrete placing operations. Aggregate weights shall be based on the saturated surface dry condition. The statement shall be accompanied by test results from a Government approved independent commercial testing laboratory, attesting that the proportions selected will produce concrete of the qualities indicated. No substitutions shall be made in the materials used in the work without additional tests to show that the quality of the concrete is satisfactory. The use of pozzolan is mandatory at a rate between 20 to 30 percent by weight of cement replacement.

Qualifications of Technicians Sampling and Testing Concrete; .

Contractors shall submit a statement that technicians sampling and testing concrete have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to the ACI minimum guidelines for certification of Concrete Field Testing Technicians, Grade I.

SD-09 Reports

Sampling and Testing; G.

Certified copies of laboratory test reports, including all test data, for aggregate, admixtures, and curing compound. These tests shall be made by an approved commercial laboratory or by a laboratory maintained by the manufacturers of the materials.

SD-13 Certificates

Cementitious Materials; G.

Manufacturer's certification of compliance, accompanied by mill test reports attesting that the materials meet the requirements of the specification under which it is furnished, for cement and pozzolan. No cement or pozzolan shall be used until notice of acceptance has been given. Cement and pozzolan may be subjected to check testing by the Government from samples obtained at the mill, at transfer points, or at the project site. Calcium Chloride shall not be used as a substitute additive.

1.4 DESIGN AND PERFORMANCE REQUIREMENTS

The Government will maintain the option to sample and test concrete to determine compliance with the specifications. The Contractor shall provide facilities and labor as may be necessary to assist the Government in procurement of representative test samples. Concrete will be sampled in accordance with ASTM C 172. Slump and air content will be determined in accordance with ASTM C 143 and ASTM C 231, respectively, when cylinders are molded. Compression test specimens will be made, cured, and transported in accordance with ASTM C 31. Compression test specimens will be tested in accordance with ASTM C 39. Samples for strength tests will be taken not less than once each shift in which concrete is produced. A minimum of three specimens will be made from each sample; two will be tested at 90 days (use of pozzolan is required) for acceptance, and one will be tested at 7 days for information.

1.4.1 Strength

Acceptance test results will be the average strengths of two specimens tested at 90 days. The strength of the concrete will be considered satisfactory so long as the average of three consecutive acceptance test results equal or exceed the specified compressive strength, f'c, and no individual acceptance test result falls below f'c by more than 500 psi.

1.4.2 Construction Tolerances

A Class "C" finish shall apply to all surfaces except those specified to receive a Class "D" finish. A Class "D" finish shall apply to all surfaces which will be permanently concealed after construction. The surface requirements for the classes of finish required shall be as specified in ACI 347.

1.4.3 Concrete Mixture Proportions

Concrete mixture proportions shall be the responsibility of the Contractor. Mixture proportions shall include the dry weights of cementitious material; the nominal maximum size of the coarse aggregate; the specific gravities, absorptions, and saturated surface-dry weights of fine and coarse aggregates; the quantities, types, and names of admixtures; and quantity of water per cubic yard of concrete. All materials included in the mixture proportions shall be of the same type and from the same source as will be used on the project. Specified compressive strength f'c shall be 4,000 psi at 28 days. The maximum nominal size coarse aggregate shall be 1 inch, in accordance with ACI 318/318R. The air content shall be between 3 and 5 percent. The slump shall be between 1 and 3 inches. The maximum water cement ratio shall be 0.45.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Cementitious Materials

Cement shall be Portland cement and shall conform to appropriate specifications listed:

2.1.1.1 Portland Cement

ASTM C 150, Type II, low alkali.

2.1.1.2 Pozzolan

Pozzolan shall conform to ASTM C 618, Class F. Loss on ignition shall not exceed 3.0 percent. Supplementary optional chemical requirements shall apply.

2.1.2 Aggregates

Aggregates shall meet the quality and grading requirements of ASTM C 33. Coarse aggregate shall conform to size 57.

2.1.3 Admixtures

Admixtures to be used, when required or approved, shall comply with the appropriate specification listed. Chemical admixtures that have been in storage at the project site for longer than 6 months or that have been subjected to freezing shall be re-tested at the expense of the Contractor at the request of the Contracting Officer and shall be rejected if test results are not satisfactory.

2.1.3.1 Air-Entraining Admixture

ASTM C 260.

2.1.3.2 Accelerating Admixture

ASTM C 494, Type C or E, except calcium chloride is not allowed.

2.1.3.3 Water-Reducing or Retarding Admixture

ASTM C 494, Type A, B, D, F or G. Type G admixture shall not be used for slabs on grade.

2.1.4 Water

Water for mixing and curing shall be fresh, clean, potable, and free from injurious amounts of oil, acid, salt, or alkali, except that unpotable water may be used if it meets the requirements of COE CRD-C 400.

2.1.5 Curing Materials

2.1.5.1 Impervious Sheet Materials

Impervious sheet materials, ASTM C 171, type optional, except polyethylene film, if used, shall be white opaque.

2.1.5.2 Membrane-Forming Curing Compound

ASTM C 309, Type 1-D or 2, Class A or B.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 General

Construction joints shall be prepared to expose coarse aggregate, and the surface shall be clean, damp, and free of laitance. Ramps and walkways, as necessary, shall be constructed to allow safe and expeditious access for concrete and workmen. Snow, ice, standing or flowing water, loose particles, debris, and foreign matter shall have been removed. Earth foundations shall be satisfactorily compacted. Spare vibrators shall be available. The entire preparation shall be accepted by the Government prior to placing.

3.1.2 Embedded Items

Reinforcement shall be secured in place; joints, anchors, and other embedded items shall have been positioned. Internal ties shall be arranged so that when the forms are removed all metal will be not less than 2 inches from concrete surfaces permanently exposed to view or exposed to water on the finished structures. Embedded items shall be free of oil and other foreign matters such as loose coatings or rust, paint, and scale. The embedding of wood in concrete will be permitted only when specifically authorized or directed. All equipment needed to place, consolidate, protect, and cure the concrete shall be at the placement site and in good operating condition.

3.1.3 Formwork Installation

Forms shall be properly aligned, adequately supported, and mortar-tight. The form surfaces shall be smooth and free from irregularities, dents, sags, or holes when used for permanently exposed faces. All exposed joints and edges shall be chamfered, unless otherwise indicated.

3.1.4 Production of Concrete

3.1.4.1 Ready-Mixed Concrete

Ready-mixed concrete shall conform to ASTM C 94 except as otherwise specified.

3.1.4.2 Batching and Mixing Equipment

The contractor shall have the option of using an on-site batching and mixing facility. The facility shall provide sufficient capacity to prevent cold joints. The method of measuring materials, batching operation, and mixer shall be submitted for review. On-site plant shall conform to the requirements of ASTM C 94.

3.2 CONVEYING AND PLACING CONCRETE

3.2.1 General

Concrete placement shall not be permitted when weather conditions prevent proper placement and consolidation without approval. When concrete is mixed and/or transported by a truck mixer, the concrete shall be delivered to the site of the work and discharge shall be completed within 1-1/2 hours or 45 minutes when the placing temperature is 85 degrees F or greater unless a retarding admixture is used. Concrete shall be conveyed from the mixer to the forms as rapidly as practicable by methods which prevent segregation or loss of ingredients. Concrete shall be in place and consolidated within 15 minutes after discharge from the mixer. Concrete shall be deposited as close as possible to its final position in the forms and be so regulated that it may be effectively consolidated in horizontal layers 18 inches or less in thickness with a minimum of lateral movement. The placement shall be carried on at such a rate that the formation of cold joints will be prevented.

3.2.2 Consolidation

Each layer of concrete shall be consolidated by rodding, spading, or internal vibrating equipment. External vibrating equipment may be used when authorized. Internal vibration shall be systematically accomplished by inserting the vibrator through the fresh concrete in the layer below at a uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1.5 times the radius of action of the vibrator and overlay the adjacent, just vibrated area by a few inches. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the layer below, if such a layer exists. It shall be held stationary until the concrete is consolidated and then withdrawn slowly at the rate of about 3 inches per second.

3.2.3 Cold-Weather Requirements

No concrete placement shall be made when the ambient temperature is below 35 degrees F or if the ambient temperature is below 40 degrees F and falling. Suitable covering and other means as approved shall be provided for maintaining the concrete at a temperature of at least 50 degrees F for not less than 72 hours after placing and at a temperature above freezing for the remainder of the curing period. Salt, chemicals, or other foreign materials shall not be mixed with the concrete to prevent freezing. Any concrete damaged by freezing shall be removed and replaced at the expense of the Contractor.

3.2.4 Hot-Weather Requirements

When the rate of evaporation of surface moisture, as determined by use of Figure 1 of ACI 308, is expected to exceed 0.2 pound per square foot per hour, provisions for windbreaks, shading, fog spraying, or covering with a light-colored material shall be made in advance of placement, and such protective measures shall be taken as quickly as finishing operations will allow.

3.3 FINISHING

3.3.1 General

No finishing or repair will be done when either the concrete or the ambient temperature is below 50 degrees F.

3.3.2 Finishing Formed Surfaces

All fins and loose materials shall be removed, and surface defects including tie holes shall be filled. All honeycomb areas and other defects shall be repaired. All unsound concrete shall be removed from areas to be repaired. Surface defects greater than 1/2 inch in diameter and holes left by removal of tie rods in all surfaces not to receive additional concrete shall be reamed or chipped and filled with dry-pack mortar. The prepared area shall be brush-coated with an approved epoxy resin or latex bonding compound or with a neat cement grout after dampening and filled with mortar or concrete. The cement used in mortar or concrete for repairs to all surfaces permanently exposed to view shall be a blend of portland cement and white cement so that the final color when cured will be the same as adjacent concrete.

3.3.3 Finishing Unformed Surfaces

All unformed surfaces that are not to be covered by additional concrete or backfill shall be float finished to elevations shown, unless otherwise specified. Surfaces to receive additional concrete or backfill shall be brought to the elevations shown and left as a true and regular surface. Exterior surfaces shall be sloped for drainage unless otherwise shown. Joints shall be carefully made with a jointing tool. Unformed surfaces shall be finished to a tolerance of 3/8 inch for a float finish as determined by a 10 foot straightedge placed on surfaces shown on the plans to be level or having a constant slope. Finishing shall not be performed while there is excess moisture or bleeding water on the surface. No water

or cement shall be added to the surface during finishing.

3.3.3.1 Float Finish

Surfaces to be float finished shall be screeded and darbied or bullfloated to eliminate the ridges and to fill in the voids left by the screed. In addition, the darby or bullfloat shall fill all surface voids and only slightly embed the coarse aggregate below the surface of the fresh concrete. When the water sheen disappears and the concrete will support a person's weight without deep imprint, floating should be completed. Floating should embed large aggregates just beneath the surface, remove slight imperfections, humps, and voids to produce a plane surface, compact the concrete, and consolidate mortar at the surface.

3.3.3.2 Broom Finish

A broom finish shall be applied to slab. The concrete shall be screeded and floated to required finish plane with no coarse aggregate visible. After surface moisture disappears, the surface shall be broomed or brushed with a broom or fiber bristle brush in a direction transverse to that of the main traffic or as directed.

3.4 CURING AND PROTECTION

Beginning immediately after placement and continuing for at least 7 days, all concrete shall be cured and protected from premature drying, extremes in temperature, rapid temperature change, freezing, mechanical damage, and exposure to rain or flowing water. All materials and equipment needed for adequate curing and protection shall be available and at the site of the placement prior to the start of concrete placement. Preservation of moisture for concrete surfaces not in contact with forms shall be accomplished by one of the following methods:

a. Continuous sprinkling or ponding.

b. Application of absorptive mats or fabrics kept continuously wet.

c. Application of impervious sheet material conforming to ASTM C 171.

d. Application of membrane-forming curing compound conforming to ASTM C 309, Type 1-D, on surfaces permanently exposed to view and Type 2 on other surfaces shall be accomplished in accordance with manufacturer's instructions.

The preservation of moisture for concrete surfaces placed against wooden forms shall be accomplished by keeping the forms continuously wet for 7 days. If forms are removed prior to end of the required curing period, other curing methods shall be used for the balance of the curing period. During the period of protection removal, the temperature of the air in contact with the concrete shall not be allowed to drop more than 25 degrees F within a 24 hour period.

3.5 TESTS AND INSPECTIONS

3.5.1 General

The individuals who sample and test concrete as required in this specification shall have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to the ACI minimum guidelines for certification of Concrete Field Testing Technicians, Grade I.

3.5.2 Inspection Details and Frequency of Testing

3.5.2.1 Preparations for Placing

Foundation or construction joints, forms, and embedded items shall be inspected in sufficient time prior to each concrete placement by the Contractor to certify that it is ready to receive concrete.

3.5.2.2 Air Content

Air content shall be checked at least once during each shift that concrete is placed. Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 231.

3.5.2.3 Slump

Slump shall be checked once during each shift that concrete is produced. Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 143.

3.5.2.4 Consolidation and Protection

The Contractor shall ensure that the concrete is properly consolidated, finished, protected, and cured.

3.5.3 Action Required

3.5.3.1 Placing

The placing foreman shall not permit placing to begin until he has verified that an adequate number of acceptable vibrators, which are in working order and have competent operators, are available.

3.5.3.2 Air Content

Whenever a test result is outside the specification limits, the concrete shall not be delivered to the forms and an adjustment shall be made to the dosage of the air-entrainment admixture.

3.5.3.3 Slump

Whenever a test result is outside the specification limits, the concrete shall not be delivered to the forms and an adjustment should be made in the batch weights of water and fine aggregate. The adjustments are to be made so that the water-cement ratio does not exceed that specified in the submitted concrete mixture proportion.

3.5.4 Reports

The results of all tests and inspections conducted at the project site shall be reported informally at the end of each shift and in writing weekly and shall be delivered within 3 days after the end of each weekly reporting period.

-- End of Section --

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DIVISION 05 - METALS

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SECTION 05101

METALWORK FABRICATION AND MISCELLANEOUS PROVISIONS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 123	(1989a) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 325	(1994) Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A 780	(1993a) Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM E 94	(1993) Radiographic Testing
ASTM E 165	(1995) Liquid Penetrant Examination Inspection Method
ASTM E 709	(1995) Magnetic Particle Examination

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B4.1	(1967; R 1994) Preferred Limits and Fits for Cylindrical Parts

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1	(1994) Structural Welding Code - Steel

1.2 PAYMENT

1.2.1 [Enter Appropriate Subpart Title Here]1.2.1.1 [Enter Appropriate Subpart Title Here]

Payment will be made for costs associated with metal fabrication and machine work under the bid item **"Prefabricated Pedestrian Bridge"** in section 05910 (Prefabricated Steel Pedestrian Bridge), which includes furnishing all plant, labor, materials and equipment and performing all operations necessary for the metalwork fabrication and miscellaneous

provisions as specified.

1.3 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-04 Drawings

Detail Drawings; G.

Detail drawings for metalwork shall be submitted and approved prior to fabrication.

SD-07 Schedules

Materials Orders; .

Copies of purchase orders, mill orders, shop orders and work orders for materials shall be submitted prior to the use of the materials in the work.

Materials List; .

Materials list for fabricated items shall be submitted at the time of submittal of detail drawings.

Shipping Bill; .

Shipping bill shall be submitted with the delivery of finished pieces to the site.

SD-08 Statements

Welding Procedures for Structural Steel; G.

Schedules of welding procedures for steel structures shall be submitted and approved prior to commencing fabrication.

Structural Steel Welding Repairs; G.

Welding repair plans for steel shall be submitted and approved prior to making repairs.

SD-09 Reports

Tests, Inspections, and Verifications; .

Certified test reports for materials shall be submitted with all materials delivered to the site.

SD-13 Certificates

Qualification of Welders and Welding Operators; .

Certifications for welders and welding operators shall be submitted prior to commencing fabrication.

SD-18 Records

Materials Disposition Records; .

Materials disposition records shall be submitted before completion of contract.

1.4 METALWORK DETAIL DRAWINGS

Detail drawings for metalwork shall include catalog cuts, templates, fabrication and assembly details and type, grade and class of material as appropriate. Elements of fabricated items inadvertently omitted on contract drawings shall be detailed by the fabricator and indicated on the detail drawings.

1.5 QUALIFICATION OF WELDERS AND WELDING OPERATORS

The Contractor shall certify that the qualification of welders and welding operators and tack welders who will perform structural steel welding have been qualified for the particular type of work to be done in accordance with the requirements of AWS D1.1, Section 5, prior to commencing fabrication. The certificate shall list the qualified welders by name and shall specify the code and procedures under which qualified and the date of qualification. Prior qualification will be accepted if welders have performed satisfactory work under the code for which qualified within the preceding three months. The Contractor shall require welders to repeat the qualifying tests when their work indicates a reasonable doubt as to proficiency. Those passing the requalification tests will be recertified. Those not passing will be disqualified until passing. All expenses in connection with qualification and requalification shall be borne by the Contractor.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Materials Orders

The Contractor shall furnish 2 copies of purchase orders, mill orders, shop orders and work orders for all materials orders and items used in the work. Where mill tests are required purchase orders shall contain the test site address and the name of the testing agency.

2.1.2 Materials List

The Contractor shall furnish a materials list of the materials to be used in the fabrication of each item.

2.1.3 Shipping Bill

The Contractor shall furnish a shipping bill or memorandum of each shipment of finished pieces or members to the project site giving the designation mark and weight of each item, the number of items, the total weight, and the car initial and number if shipped by rail in carload lots. Duplicate copies of shipping bills shall be mailed promptly to Contracting Officer.

2.2 FABRICATION

2.2.1 Structural Fabrication

Material must be straight before being laid off or worked. If straightening is necessary it shall be done by methods that will not impair the metal. Sharp kinks or bends shall be cause for rejection of the material. Material with welds will not be accepted except where welding is definitely specified, indicated or otherwise approved. Bends shall be made by approved dies, press brakes or bending rolls. Where heating is required, precautions shall be taken to avoid overheating the metal and it shall be allowed to cool in a manner that will not impair the original properties of the metal. Proposed flame cutting of material other than structural steel shall be subject to approval and shall be indicated on detail drawings. Shearing shall be accurate and all portions of the work shall be neatly finished. Corners shall be square and true unless otherwise shown. Re-entrant cuts shall be filleted to a minimum radius of 3/4 inch unless otherwise approved. Finished members shall be free of twists, bends and open joints. Bolts, nuts and screws shall be tight.

2.2.1.1 Dimensional Tolerances for Structural Work

Dimensions shall be measured by an approved calibrated steel tape of approximately the same temperature as the material being measured. The overall dimensions of an assembled structural unit shall be within the tolerances indicated on the drawings or as specified in the particular section of these specifications for the item of work. Where tolerances are not specified in other sections of these specifications or shown, an allowable variation of 1/32 inch is permissible in the overall length of component members with both ends milled and component members without milled ends shall not deviate from the dimensions shown by more than 1/16 inch for members 30 feet or less in length and by more than 1/8 inch for members over 30 feet in length.

2.2.1.2 Structural Steel Fabrication

Structural steel may be cut by mechanically guided or hand-guided torches, provided an accurate profile with a surface that is smooth and free from cracks and notches is obtained. Surfaces and edges to be welded shall be prepared in accordance with AWS D1.1, Subsection 3.2. Where structural steel is not to be welded, chipping or grinding will not be required except as necessary to remove slag and sharp edges of mechanically guided or hand-guided cuts not exposed to view. Hand-guided cuts which are to be exposed or visible shall be chipped, ground or machined to sound metal.

2.2.2 Welding

2.2.2.1 Welding of Structural Steel

a. Welding Procedures for Structural Steel - Welding procedures for structural steel shall be prequalified as described in AWS D1.1, Subsection 5.1 or shall be qualified by tests as prescribed in AWS D1.1, Section 5. Properly documented evidence of compliance with all requirements of these specifications for previous qualification tests shall establish a welding procedure as prequalified. For welding procedures qualified by tests, the test welding and specimen testing must be witnessed and the test report document signed by the Contracting Officer. Approval of any welding procedure will not relieve the Contractor of the responsibility for producing a finished structure meeting all requirements of these specifications. The Contractor will be directed or authorized to make any changes in previously approved welding procedures that are deemed necessary or desirable by the Contractor Officer. The Contractor shall submit a complete schedule of welding procedures for each steel structure to be welded. The schedule shall conform to the requirements specified in the provisions AWS D1.1, Sections 2, 3, 4, 7 and 9 and applicable provisions of Section 10. The schedule shall provide detailed procedure specifications and tables or diagrams showing the procedures to be used for each required joint. Welding procedures must include filler metal, preheat, interpass temperature and stress-relief heat treatment requirements. Each welding procedure shall be clearly identified as being prequalified or required to be qualified by tests. Welding procedures must show types and locations of welds designated or in the specifications to receive nondestructive examination.

b. Welding Process - Welding of structural steel shall be by an electric arc welding process using a method which excludes the atmosphere from the molten metal and shall conform to the applicable provisions of AWS D1.1, Sections 1 thru 7, 9, 10 and 11. Welding shall be such as to minimize residual stresses, distortion and shrinkage.

c. Welding Technique

(1) Filler Metal - The electrode, electrode-flux combination and grade of weld metal shall conform to the appropriate AWS specification for the base metal and welding process being used shall be as shown where a specific choice of AWS specification allowables is required. The AWS designation of the electrodes to be used shall be included in the schedule of welding procedures. Only low hydrogen electrodes shall be used for manual shielded metal-arc welding regardless of the thickness of the steel. A controlled temperature storage oven shall be used at the job site as prescribed by AWS D1.1, Subsection 4.5 to maintain low moisture of low hydrogen electrodes.

(2) Preheat and Interpass Temperature - Preheating shall be performed as required by AWS D1.1, Subsection 4.2 and 4.3 or as otherwise specified except that the temperature of the base metal shall be at least 70 degrees F. The weldments to be preheated shall be slowly and uniformly heated by approved means to the prescribed temperature, held at that temperature until the welding

is completed and then permitted to cool slowly in still air.

(3) Stress-Relief Heat Treatment - Where stress relief heat treatment is specified or shown, it shall be in accordance with the requirements of AWS D1.1, Subsection 4.4 unless otherwise authorized or directed.

d. Workmanship - Workmanship for welding shall be in accordance with AWS D1.1, Section 3 and other applicable requirements of these specifications.

(1) Preparation of Base Metal - Prior to welding the Contractor shall inspect surfaces to be welded to assure compliance with AWS D1.1, Subsection 3.2.

(2) Temporary Welds - Temporary welds required for fabrication and erection shall be made under the controlled conditions prescribed for permanent work. Temporary welds shall be made using low-hydrogen welding electrodes and by welders qualified for permanent work as specified in these specifications. Preheating for temporary welds shall be as required by AWS D1.1 for permanent welds except that the minimum temperature shall be 120 degrees F in any case. In making temporary welds arcs shall not be struck in other than weld locations. Each temporary weld shall be removed and ground flush with adjacent surfaces after serving its purpose.

(3) Tack Welds - Tacks welds that are to be incorporated into the permanent work shall be subject to the same quality requirements as the permanent welds and shall be cleaned and thoroughly fused with permanent welds. Preheating shall be performed as specified above for temporary welds. Multiple-pass tack welds shall have cascaded ends. Defective tack welds shall be removed before permanent welding.

2.2.3 Bolted Connections

2.2.3.1 Bolted Structural Steel Connections

Bolts, nuts and washers shall be of the type specified or indicated. All nuts shall be equipped with washers except for high strength bolts. Beveled washers shall be used where bearing faces have a slope of more than 1:20 with respect to a plane normal to the bolt axis. Where the use of high strength bolts is specified or indicated the materials, workmanship and installation shall conform to the applicable provisions of ASTM A 325.

a. Bolt Holes - Bolt holes shall be accurately located, smooth, perpendicular to the member.

(1) Holes for regular bolts shall be drilled or subdrilled and reamed in the shop and shall not be more than 1/16 inch larger than the diameter of the bolt.

(2) Holes for fitted bolts shall be match-reamed or drilled in

the shop. Burrs resulting from reaming shall be removed. The threads of bolts shall be entirely outside of the holes. The body diameter of bolts shall have tolerances as recommended by ASME B4.1 for the class of fit specified. Fitted bolts shall be fitted in reamed holes by selective assembly to provide an LN-2 fit.

(3) Holes for high strength bolts shall have diameters of not more than 1/16 inch larger than bolt diameters. If the thickness of the material is not greater than the diameter of the bolts the holes may be punched. If the thickness of the material is greater than the diameter of the bolts the holes may be drilled full size or subpunched or subdrilled at least 1/8 inch smaller than the diameter of the bolts and then reamed to full size. Poor matching of holes will be cause for rejection. Drifting occurring during assembly shall not distort the metal or enlarge the holes. Reaming to a larger diameter of the next standard size bolt will be allowed for slight mismatching.

2.2.4 Miscellaneous Provisions

2.2.4.1 Metallic Coatings

Zinc Coatings - Zinc coatings shall be applied in a manner and of a thickness and quality conforming to ASTM A 123. Where zinc coatings are destroyed by cutting, welding or other causes the affected areas shall be regalvanized. Coatings 2 ounces or heavier shall be regalvanized with a suitable low-melting zinc base alloy similar to the recommendations of the American Hot-Dip Galvanizers Association to the thickness and quality specified for the original zinc coating. Coatings less than 2 ounces shall be repaired in accordance with ASTM A 780.

2.2.5 Shop Assembly

Each structural unit furnished shall be assembled in the shop to determine the correctness of the fabrication and matching of the component parts unless otherwise specified. Tolerances shall not exceed those shown. Each unit assembled shall be closely checked to ensure that all necessary clearances have been provided. Assembly in the shop shall be in the same position as final installation in the field unless otherwise specified. Assembly and disassembly work shall be performed in the presence of the Contracting Officer unless waived in writing. Errors or defects disclosed shall be immediately remedied by the Contractor without cost to the Government. Before disassembly for shipment each piece of a structural unit shall be match-marked to facilitate erection in the field. The location of match-marks shall be indicated by circling with a ring of white paint after the shop coat of paint has been applied or as otherwise directed.

2.3 TESTS, INSPECTIONS, AND VERIFICATIONS

The Contractor shall have required material tests and analyses performed and certified by an approved laboratory to demonstrate that materials are in conformity with the specifications. These tests and analyses shall be

performed and certified at the Contractor's expense. Tests, inspections, and verifications shall conform to the requirements of the particular sections of these specifications for the respective items of work unless otherwise specified or authorized. Tests shall be conducted in the presence of the Contracting Officer if so required. The Contractor shall furnish specimens and samples for additional independent tests and analyses upon request by the Contracting Officer. Specimens and samples shall be properly labeled and prepared for shipment.

2.3.1 Nondestructive Testing

When doubt exists as to the soundness of any material part such part may be subjected to any form of nondestructive testing determined by the Contracting Officer. This may include ultrasonic, magnaflux, dye penetrant, x-ray, gamma ray or any other test that will thoroughly investigate the part in question. The cost of such investigation will be borne by the Government. Any defects will be cause for rejection and rejected parts shall be replaced and retested at the Contractor's expense.

2.3.2 Inspection of Structural Steel Welding

The Contractor shall maintain an approved inspection system and perform required inspections in accordance with Contract Clause CONTRACTOR INSPECTION SYSTEM. Welding shall be subject to inspection to determine conformance with the requirements of AWS D1.1, the approved welding procedures and provisions stated in other sections of these specifications. Nondestructive examination of designated welds will be required. Supplemental examination of any joint or coupon cut from any location in any joint may be required.

2.3.2.1 Visual Examination

All completed welds shall be cleaned and carefully examined for insufficient throat or leg sizes, cracks, undercutting, overlap, excessive convexity or reinforcement and other surface defects to ensure compliance with the requirements of AWS D1.1, Section 3 and Section 9, Part D.

2.3.2.2 Nondestructive Examination

The nondestructive examination of shop and field welds shall be performed as designated or described in the sections of these specifications covering the particular items of work.

a. Testing Agency - The nondestructive examination of welds and the evaluation of examination tests as to the acceptability of the welds shall be performed by a testing agency adequately equipped and competent to perform such services or by the Contractor using suitable equipment and qualified personnel. In either case written approval of the examination procedures is required and the examination tests shall be made in the presence of the Contracting Officer. The evaluation of examination tests shall be subject to the approval and all records shall become the property of the Government.

b. Examination Procedures - Examination procedures shall conform to

the following requirements.

(1) Ultrasonic Testing - Making, evaluating and reporting ultrasonic testing of welds shall conform to the requirements of AWS D1.1, Section 6, Part C. The ultrasonic equipment shall be capable of making a permanent record of the test indications. A record shall be made of each weld tested.

(2) Radiographic Testing - Making, evaluating and reporting radiographic testing of welds shall conform to the requirements of AWS D1.1, Section 6, Part B and ASTM E 94.

(3) Magnetic Particle Inspection - Magnetic particle inspection of welds shall conform to the applicable provisions of ASTM E 709.

(4) Dye Penetrant Inspection - Dye penetrant inspection of welds shall conform to the applicable provisions of ASTM E 165.

c. Acceptability of Welds - Welds shall be unacceptable if shown to have defects prohibited by AWS D1.1, Subsection 9.25 or possess any degree of incomplete fusion, inadequate penetration or undercutting.

2.3.2.3 Test Coupons

The Government reserves the right to require the Contractor to remove coupons from completed work when doubt as to soundness cannot be resolved by nondestructive examination. Should tests of any two coupons cut from the work of any welder show strengths less than that specified for the base metal it will be considered evidence of negligence or incompetence and such welder shall be removed from the work. When coupons are removed from any part of a structure the members cut shall be repaired in a neat manner with joints of the proper type to develop the full strength of the members. Repaired joints shall be peened as approved or directed to relieve residual stress. The expense for removing and testing coupons, repairing cut members and the nondestructive examination of repairs shall be borne by the Government or the Contractor in accordance with the Contract Clauses INSPECTION AND ACCEPTANCE.

2.3.2.4 Supplemental Examination

When the soundness of any weld is suspected of being deficient due to faulty welding or stresses that might occur during shipment or erection the Government reserves the right to perform nondestructive supplemental examinations before final acceptance. The cost of such inspection will be borne by the Government.

2.3.3 Structural Steel Welding Repairs

Defective welds in the structural steel welding repairs shall be repaired in accordance with AWS D1.1, Subsection 3.7. Defective weld metal shall be removed to sound metal. The surfaces shall be thoroughly cleaned before welding. Welds that have been repaired shall be retested by the same methods used in the original inspection. Except for the repair of members cut to remove test coupons and found to have acceptable welds costs of

repairs and retesting shall be borne by the Contractor.

PART 3 EXECUTION

3.1 INSTALLATION

All parts to be installed shall be thoroughly cleaned. Packing compounds, rust, dirt, grit and other foreign matter shall be removed. Where units or items are shipped as assemblies they will be inspected prior to installation. Bolts and screws shall be tightened firmly and uniformly but care shall be taken not to overstress the threads. When a half nut is used for locking a full nut the half nut shall be placed first and followed by the full nut. Threads of all bolts except high strength bolts, nuts and screws shall be lubricated with an approved lubricant before assembly.

3.1.1 Alignment and Setting

Each structural unit shall be accurately aligned by the use of steel shims or other approved methods so that no distortion of any member occurs before it is fastened in place. The alignment of all parts with respect to each other shall be true within the respective tolerances required.

3.2 TESTS

3.2.1 Workmanship

Workmanship shall be of the highest grade and in accordance with the best modern practices to conform with the specifications for the item of work being furnished.

-- End of Section --